







# Lloyd's Register

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**LLOYD'S REGISTER**

**OF**

**BRITISH AND FOREIGN**

**SHIPPING.**



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**LLOYD'S REGISTER**  
OF  
**BRITISH AND FOREIGN**  
**SHIPPING.**

From 1st JULY, 1855, to the 30th JUNE, 1856.

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1855.

W. & A. G. L. L.

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# SHIPPING

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# MEMORANDUM TO THE SECRETARY

1961-1962

On 1961-1962, the Secretary of the

Department of the Interior, the Secretary of the

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## LIVERPOOL BRANCH.

1855-56.

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Chairman of the Shipowners' Association.

Chairman of the Shipbuilders' Association.

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### SECRETARY.

MR. ROBERT E. MUDGE.

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MR. GEORGE WINRAM.

MR. WILLIAM PERKIN

MR. SENHOUSE MARTINDALE

*Office, 14, Tower Chambers.*

MEMORANDUM

TO THE SECRETARY

FROM THE SECRETARY

SUBJECT: [Illegible]

1. [Illegible]  
2. [Illegible]  
3. [Illegible]  
4. [Illegible]  
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4. [Illegible]  
5. [Illegible]

RECOMMENDATIONS OF THE COMMITTEE

1. [Illegible]  
2. [Illegible]  
3. [Illegible]

CONCLUSION

[Illegible]

REMARKS

[Illegible]

SIGNATURES

BY: [Illegible]  
[Illegible]

BY: [Illegible]  
[Illegible]

[Illegible]



# LLOYD'S REGISTER

OF

## BRITISH AND FOREIGN SHIPPING.

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### RULES AND REGULATIONS.

1. THE operations of the Societies of the two Register Books of Shipping formerly printed for the use of Merchants, Ship-Owners, and Underwriters, having ceased in the year 1834, this Society was then established for the purpose of obtaining a faithful and accurate Classification of the Mercantile Shipping of the United Kingdom, and of the Foreign Vessels trading thereto, and for the government of which the following Rules and Regulations have been from time to time adopted.

2. A Register Book to be printed annually for the use of Subscribers.

3. Each person subscribing the sum of Three Guineas per annum (or such other sum as the General Committee may fix), to be considered a Member of the Society, and entitled *for his own use* to one copy of the Register Book.

4. The subscription of Public Companies, or Public Establishments (not being engaged in Marine Insurance), to be Ten Guineas per Annum.

5. The subscription of Marine Insurance Companies to be regulated by the Committee on special application, in each case, but not to be less than Ten Guineas per Annum.

6. The Register Book to be periodically posted throughout the year.

7. For the convenience of Subscribers not resident in London, a Supplement, containing the additions to, and corrections made in, the Register Book, to be printed fortnightly in such convenient form, as to admit of its transmission by Post, so that such parties may be furnished, from time to time, with the latest and most complete information.

8. The superintendence of the affairs of the Society to be under the direction of a Committee in London, of twenty-four members, consisting

of an equal proportion of Merchants, Ship-Owners, and Underwriters. The Chairman for managing the affairs of Lloyd's, and the Chairman of the General Ship-Owners' Society, and also the Chairman and Deputy Chairman of the Liverpool Committee, and the Chairman of the Rotation Committees for the time being, to be, *ex officio*, Members of the Committee.

9. Six of the Members, namely, two of each of the constituent parts of the Committee, to go out annually by rotation, but to be eligible to be re-elected.

10. The vacancies so arising to be filled up by the election of two Underwriters and one Merchant by the Committee for managing the affairs of Lloyd's, and two Ship-Owners and one Merchant by the Committee of the General Ship-Owners' Society.

11. The Committee to appoint from their own body, annually, a Chairman and Deputy Chairman, and also a Chairman for a Sub-Committee of Classification.

12. The Committee to appoint a Sub-Committee of Classification, to be so regulated that each Member of the General Committee may, in rotation, take his turn of duty therein throughout the year.

13. The Secretary, Clerks, and Servants of the Society, and the Surveyors, to be appointed by, and be under the direction of the General Committee.

14. Special meetings to be convened by order of the Chairman, or Deputy Chairman, or on the requisition of any three members.

15. All elections and appointments to be made by ballot.

16. No Member of the Committee to be permitted to be present on the decision of the classification of any ship of which he is the owner, or wherein he is directly or indirectly interested.

17. The Committee to be empowered to make such By-laws for their own government and proceedings as they may deem requisite, not being inconsistent with the original Rules and Regulations under which the Society was established; but no new Rule or By-law to be introduced, nor any Rule or By-law altered, without special notice being given for that purpose at the meeting of the Committee next preceding that at which such Motion is intended to be made; such notice to be inserted in the summons convening the meeting. No new Rule, or alteration in any existing Rule, materially affecting the classification of ships, to take effect until the expiration of six months from the time it shall have been determined upon.

18. All Reports of survey to be made in writing by the Surveyors according to the forms prescribed, and submitted for the consideration of the General Committee, or of the Sub-Committee of Classification; but the



character assigned by the latter to be subject to confirmation by the General Committee.

19. The reports of the Surveyors, and all documents and proceedings relating to the classification of ships, to be carefully preserved, and parties proving themselves to be interested therein, to have access to the same under the direction of the Chairman or Deputy Chairman.

20. Foreign ships, and ships built in the British possessions abroad where there is not a Surveyor (*See also Section 51*), to be surveyed on their arrival at a port in the United Kingdom; but a due regard is to be had to the circumstance of their having been exempted from the supervision while building to which all British ships are subjected, and the character to be assigned to them is to be regulated according to their intrinsic quality, and from the best information the Committee can obtain.

21. In every case in which the Character assigned to a ship may be proposed, on survey, to be reduced, notice is to be given in writing to the Owner, Master, or Agent, with an intimation that if the reduction be objected to, the Committee will be ready to direct a special survey, on the Owner, Master, or Agent, agreeing to pay the expenses attending the same, provided on the said survey there shall appear sufficient ground for the proposed reduction.

22. When the Surveyors consider Repairs to be requisite, they are respectfully to communicate the same in writing to the Owner, Master, or Agent, and if such repairs be not entered upon within a reasonable time, a corresponding report is to be made to the Committee for their decision thereon.

23. Parties considering the repairs suggested by the Surveyor to be unnecessary or unreasonable, may appeal to the Committee, who will direct a special survey to be held; but should the opinion of the Surveyor be confirmed by the Committee, then the expense of such special survey is to be paid by the party appealing.

24. The Surveyors to the Society not to be permitted (without the especial sanction of the Committee), to receive any Fee, gratuity, or reward whatsoever for their own use or benefit, for any service performed by them in their capacity of Surveyors to this Society, on pain of immediate dismissal.

25. The Surveyors will be directed to attend on Special Surveys of ships under damage, or repairs for Restoration, when required by Merchants, Ship-Owners, or Underwriters; the charge for which is to be regulated according to the nature and extent of the service performed. In all cases, the application for the assistance of the Surveyors must be made in writing addressed to the Secretary.

## FUNDS.

26. The Funds to be under the authority and control of the Committee, and a statement of the Receipts and Expenditure to be annually printed for the information of the subscribers.

27. The following Fees to be charged to the Owners of ships prior to their vessels being classed and registered in the book.

## I.

*For Entering and Classing Ships, and for Entering and Classing Ships surveyed for Continuation, or repaired for Restoration.*

For each Ship ...	...	under	100 Tons ...	£1	0	0
Ditto ...	of 100 Tons and under	200	...	2	0	0
Ditto ...	200	—	300	3	0	0
Ditto ...	300	—	400	4	0	0
Ditto ...	400 and upwards	...	...	5	0	0

## II.

*For Registering Repairs.*

For each Ship ...	...	under	300 Tons ...	£0	10	0
Ditto ...	of 300 Tons and under	500	...	1	0	0
Ditto ...	500	—	1000	2	0	0
Ditto ...	1000 and upwards	...	...	3	0	0

*For Re-classing Ships (except when repaired) the Characters of which have been expunged, or change of Owners.*

For each Ship ...	...	under	200 Tons	£0	10	0
Ditto		200 — and above	1	0	0	

*Special Surveys.*

28. For Special Surveys, and where the Surveyors to the Society are required by the Owners to superintend the building of ships, or repairs for Restoration, or otherwise, a charge will be made according to the nature and extent of the service performed. In all such cases the authority of the Committee is required.

29. Certificates of Character, of the Form No. 7, signed by the Chairman of the General Committee, or by the Chairman of the Sub-Committee of Classification, and countersigned by the Secretary, will be granted on application; the charge for which will be as follows:—

For Ships under 200 Tons	...	...	...	2s. 6d. each.
200 — and above	...	...	...	5s. each.

For Ships built under Special Survey, on their

*First Classification* ... .. Gratis.

30. Rules, each copy ... .. 2s. 6d.



## CHARACTERS.

31. The Characters to be assigned to ships to be, as nearly as possible, a correct indication of their real and intrinsic qualities, and to be in all cases fixed (not by the Surveyors, but) by the Committee, after due consideration of the Reports of the Surveyors and such other documents as may be submitted to them, and will be distinguished as follows:—

### SHIPS A

To consist of new ships, or ships Continued, or Restored. *Vide Sections 34, 54, 55, 57.*

### SHIPS Æ asterisk, in Red,

To consist of ships which have passed the period assigned on the original survey, or Continuation, or Restoration; and also of ships not having had an original character, and which are found on survey of superior description, fit for the conveyance of dry and perishable goods, *to and from all parts of the world.* *Vide Section 60.*

### SHIPS Æ, in Black,

To consist of ships which are found on survey fit for the safe conveyance of dry and perishable goods on *shorter voyages.* *Vide Section 61.*

### SHIPS E

Will comprise all ships which shall be found on Survey fit for the conveyance of cargoes not in their nature subject to sea damage *on any voyage.* *Vide Section 64.*

### SHIPS I

To consist of ships fit to carry cargoes not liable to sea damage *on shorter voyages.* *Vide Section 66.*

32. In all cases in which the application of the rules must necessarily be regulated by the ship's admeasurement, the *least* tonnage is to be adopted.

## RULES FOR CLASSIFICATION.

### SHIPS A

33. Will consist of new ships and those which have not passed a prescribed age,\* provided they are kept in a state of complete repair and efficiency. The character A will not, however, be granted to any vessel, unless satisfactory evidence of the date of build and place where built is produced.

\* See the Tables of Timbering, &c. Nos. 1, 2, and 3.



34. The number of years to be assigned for this Character to be determined with reference to the original construction and quality of the vessels, the materials employed, and the mode of building; and their continuance for the time so assigned to depend upon its being shown by occasional surveys (annually if practicable) that their efficiency is duly maintained. The characters of ships A will be struck out of the Register, unless re-surveyed within a period of four years from the *date of last survey*,—or, in the case of ships exceeding the eight years' grade, within *one-half of the time* assigned. After the expiration of the periods prescribed, ships will be permitted to Continue in the character A, or may be Restored thereto, for a further limited period, on complying with the conditions hereinafter prescribed in Sections 54, 55, and 57.

35. New ships are to be surveyed while building, by the Surveyors to this Society, in the following three stages of their progress, or they will be liable to lose one year of the period to which they might otherwise be entitled. (*See Section 53.*)

*First.*—When the Frame is completed.

*Second.*—When the Beams are put in, but before the Decks are laid, and with at least two strakes of the plank of the ceiling between the lower deck and the bilge unwrought, to admit of an examination of the inner surface of the plank of the bottom.

*Third.*—When completed, and before the plank be painted or payed.

All Ships for which a higher character than Ten Years' A may be claimed, must undergo a Survey by a Surveyor who is an exclusive Officer of the Society, twice at least, while building; namely, at the first and at the second stages of their progress as above prescribed. Due notice must be given by the Builder or Owner of their being ready for this additional survey.

36. A full statement, agreeably to Form No. 4, of the dimensions, scantlings, &c. of all new ships, verified by the builder, is to be transmitted by the Surveyor, and to be kept as a record in the office of the Society.

#### RULES TO BE OBSERVED IN BUILDING SHIPS.

37. The whole of the Timber to be of good quality, of the descriptions hereinafter shown in a Tabular Form, No. 1, (see also Table A) as applicable to the several terms of years for which ships so constructed may respectively be appointed to remain on the character A. The stem, stern post, beams, transoms, apron, knightheads, hawse timbers, and kelson of ships claiming to stand *twelve years*, to be entirely free from all defects; the

frame to be well squared from the first foothook heads upwards and free from sap, and likewise below, unless the timber be proportionably larger than the scantling hereafter described; every alternate set of timbers to be framed and bolted together to the gunwale. The butts of the timbers to be close, and not to be less in thickness than one-third of the entire moulding at that place, and to be well chocked with a butt at each end of the chock. In all cases in which the heads and heels of the timbers shall be *square*, in vessels intended for the twelve years' grade, a dowel (to be in diameter from one-fourth to one-third of the moulding of the timber) must be introduced into the ends of such timbers in order to connect them together. In the construction of poops and top-gallant forecastles\* the timbers must be of the same materials as are required by the Rules (Table A) for the "Top-timbers" of the frames of ships, according to the several terms of years appointed for such ships to remain on the character A. The outside planking of the forecastle and the sheerstrakes, plank-sheers, shelf or clamp, and spirketting of poops and top-gallant forecastles must be likewise of the materials required by the Rules (Table A) for the "Topsides" of the said ships, *admitting also mahogany*. The remainder of the planking of the poops and top-gallant forecastles may be of fir of good quality. The beams of top-gallant forecastles and the mast beams, breast beam, and transom beam of poops, must be of the material required by the Rules (Table A) for the beams of the said ships. The remainder of the beams and the water-ways of the poop may be of cedar, mahogany, Baltic fir, red pine, pitch pine, larch, hackmatac, tamarac, juniper, or cowdie; *and rock elm, for such beams only*, in ships of the 7 A grade and upwards, and of yellow pine or American white spruce in all below that grade. This Rule does not apply to raised quarter decks.

38. The Scantlings of the timbers, keelson, keel, planking, &c. are not to be less than those shown in Table B., following page 28.

39. The intermediate dimensions for the scantling of timbers between the floor heads and the gunwale to be regulated in proportion to the distance from the two points. Should the room and space be increased, the siding of the timbers to be increased in proportion. Whenever ships are built with double floors, *thick strakes must be worked inside, to extend from the lower part of the short floor head chocks to the upper part of the long floor head chocks*, and be well bolted through and clenched.

40. The sizes of the deck and hold Beams have been regulated so

\* The united lengths of which must not exceed three-fifths the entire length of the upper deck.—  
See Section 41.



as to be determined by the length of the beams *amidships*, as shewn in Table C., following page 28. The beams will be required to be of the size of the midship beam, except those at the *after end* of the ship, which may be reduced in proportion to their length. If beams of spruce or yellow pine are used, the siding of such beams shall be one-fourth larger than is prescribed by the above Table, or be increased each way, siding and moulding, equal in area to that amount.

41. The Beams of all Decks to be sufficient in number and size, and securely fastened to the sides either with lodging knees of iron or wood, or with a shelf piece and waterway,\* or with a shelf-piece and knees, or with some other security equal thereto, so as sufficiently to connect the ends of the beams to the sides of the ship: and, in addition, all ships of 150 tons and above to have vertical knees to the Deck beams; and those of 200 tons and above to have vertical knees to the Hold beams, fitted as standards or hanging knees (the latter being preferred), in number as shewn in Table E., following page 28. Vessels of 13 feet, and under 15 feet hold, the spacing of the hold beams not to exceed 8 feet apart, and the deck beams 4 feet:—Vessels of 15 feet and under 18 feet hold, the spacing not to exceed 8 feet and 4 feet apart alternately, or in that proportion; the deck beams to be placed one over every hold beam, and one in all double spaces:—Vessels of 18 feet hold and above, the spacing of the beams not to exceed 4 feet 6 inches; the deck beams to be one over every hold beam. The depth in all such cases to be determined by taking the measure from the top of the limber-strake (the thickness of which, for measurement to be taken as prescribed in Table B.), to the top of the upper deck beams. Ships having a depth of hold, measured from the limber-strake to the under side of the lower deck beam, *above* 13 feet but not exceeding 15 feet, must be secured with iron riders of the sizes and be fastened as shewn in Table F., and in number not less than one on every fourth floor, on each side, from fore side of fore-mast to aft side of mizen-mast, to extend from the lower deck beams downwards so as to receive not less than two bolts in a substantial part of the floors; or *by orlop beams, sufficient in number and properly secured*. All ships having two decks, (viz. upper and lower deck,) and exceeding 23 feet in depth from the top of the limber-strake to the top of the upper deck beams, or having three decks (viz. upper, middle, and lower deck) and exceeding 23 feet in depth from the under

\* When the transverse sectional area of the shelf-pieces and waterways are equal in contents to the transverse sectional area of the midship beams of their respective decks at their ends, as given in Table C., and the beams are either dowelled and through bolted, having also a hanging knee to the lower side of every beam end, then lodging-knees may be dispensed with, except in the mast-rooms. In Ships of 500 tons and under, where lodging knees properly bolted are applied, the ordinary plank clamps may be used, but the through bolting of them cannot be dispensed with.



side of the MIDDLE DECK, to have orlop beams, the number to be in no case less than one half the number of lower deck beams in the space between the foremast and the mizen-mast. The application of this Rule to British North American built Ships and Fir Ships will not exempt them from the full operation of the Rule, Section 62. All dimensions, fastenings, and bolts of the middle deck in Vessels having three decks, (viz. upper, middle, and lower deck,) to be the same as those prescribed in the Tables, for the upper deck of ships having only two decks; and a reduction of one-sixth from the dimensions, fastenings, and bolts, prescribed in the Tables, for the upper deck of vessels having only two (viz. upper and lower deck), *will be allowed in the third or upper deck*, by some called a spar deck. The middle deck to be a perfect deck laid and caulked. *The united lengths of poop and forecastle not to exceed three-fifths of the entire length of the upper deck. All timbers of the frame including poop and forecastle to extend to the extreme height.* Every ship exceeding 150 tons to have at least one crutch for the security of the heels of the after-timbers of the frame; one pair of pointers in addition to a knee at each end of the wing transom to connect the stern frame with the after-body of the ship; and a transom over the heels of the stern timbers properly kneed. The heels of the cant timbers forward and aft to be stepped into or on the deadwood, and bolted through.

42. Shifts of timber in ships of 200 tons and upwards, to be not less than one-seventh of the main breadth; and in ships under 200 tons, to be not less than one-sixth of the main breadth.

#### PLANK.

43. The outside planking to be of good quality, of the description prescribed in the Tabular Form, No. 2 (see also Table A), and to be clear of sap and free from all defects.

44. The inside planking to be of the description shown in the Tabular Form, No. 3 (see also Table A), and free from all foxy, druxy, or decayed planks. With regard to the ceiling plank, and the efficiency of its fastening, it will be required that the planking shall be properly shifted and fastened so that there shall be at least either treenails or through bolts, or short bolts, in each plank of the ceiling *in every timber*.

45. No butts to be nearer than five feet to each other, unless there be a strake wrought between them, and then a distance of four feet will be allowed; and no butts to be on the same timber, unless there be three strakes between, as more particularly shown in the diagram annexed (*see Plate, p. 48*), but vessels under 200 tons will be exempted from the full operation of this rule; and in ships of larger tonnage a literal compliance with it will be dispensed

with in cases wherein it may be satisfactorily proved that the departure from the rule is only partial, being confined to the ends of the ship, or the planking of the topside, and does not injuriously affect the ship's general strength; but such relaxation will not be sanctioned unless an accurate description of the shifting of the plank be transmitted by the Surveyors, to enable the Committee to form a proper judgment on the case.

The thickness of the plank, according to the tonnage of the ship, is not in any instance to be less than is prescribed in Table B., following page 28.

### FASTENINGS.

46. The Treenails to be of good quality, and of a description of wood EQUAL TO THE BEST MATERIAL through which they are to pass. They are to be circular, being either engine-turned, compressed, or planed. In all cases in which planks above twelve inches in width shall be used, they must be *double fastened*; and those above nine inches in width must be treenailed double and single except bolts intervene; and if less than that width, then to be treenailed single; in each case at least one-half of the treenails must go through the ceiling. All the *outside planking* to be fastened with at least one bolt in every butt, the bolt to be through and clenched.\* The bilges to be secured with bolts so placed that from the foremast to the mainmast in ships under 300 tons there shall be, at least, one bolt through and clenched in each first foothook; and that in ships of 300 tons and upwards there shall be at least two bolts through and clenched for each set of timbers in one or other of the thick bilge strakes. All the bolts of the knees, breasthooks, crutches, riders, transoms, pointers, kelsons, shelf pieces, *waterways*, *heels of timbers against fore and after deadwood*, and of all other material fastenings, are to be driven through and clenched on rings of the same metal as the bolts. The up and down bolts in the knees to beams are not required to be through the deck, but whether clenched upon the beams, or upon the deck, they must be clenched on rings of the same metal as the bolts. The two bolts, the nearest to the crowns of the pintles and braces of the rudder are also to be through and clenched, those through the braces to be in the main piece of stern post. The limber strakes to be bolted down to the floors, and one bolt in every floor, on each side, to be through and clenched. When the heels of the first futtocks (either with full moulding or with *butted* chocks) meet at the middle line on the keel under the kelson, the through bolting

\* Where the garboard strakes are properly rabbetted into the keel, the lower edges will be required to be bolted only at the ends of the ship. Where thick garboard strakes are used, they must be bolted horizontally through the keel and each other.



of the limber strakes may be dispensed with. Ships otherwise entitled BY THEIR MATERIALS to stand higher than the SIX YEARS' grade, in which the flat of upper deck, poop, and forecastle, are fastened with nails or bolts of Copper or Yellow Metal, and the whole outside planking of which is fastened with treenails and Copper or Yellow Metal Bolts, to the entire exclusion of Iron Bolts and Iron Nails, and in which no Iron Bolts are used in any part of the Vessel, except—the frame Bolts and short Bolts of inside planking; up and down Bolts of knees which clinch upon the upper deck, poop, or forecastle beams when the flat of deck is laid over them; up and down Bolts of hold or lower deck beams; fore and aft Bolts in arms of knees to beams; Bolts of the comings, windlass or bowsprit bitts; deck fixtures; athwartship Bolts in knee of head afore the stem; Bolts or fastenings incidental to the rigging; or any fastenings above the respective planksheers of poop, waist, and forecastle—such Ships will be allowed an additional period of one Year.

And, in addition thereto, a further period of one Year will be allowed to Ships so fastened, in which the outside planking above the floor heads is also fastened entirely with Bolts of Copper or Yellow Metal in lieu of Treenails.

In all such cases of substitution, the number of bolts must be the same as is already prescribed as above for treenails; the proportion of through bolts must be at least *one-half*\*; and all the through bolts must be of malleable metal, and clenched on rings (of the same metal) inside. The sizes of the copper or mixed metal bolts must be as under, viz. :—

In ships of 150 tons and under 200 tons	...	...	...	$\frac{5}{8}$ in.	Smaller sizes must not be used.
200 ditto 350	...	...	...	$\frac{3}{4}$ in.	
350 ditto 500	...	...	...	$1\frac{1}{8}$ in.	
500 ditto 700	...	...	...	$\frac{7}{8}$ in.	
700 ditto 900	...	...	...	$1\frac{1}{8}$ in.	
900 and above	...	...	...	1 in.	

and the lengths of the short bolts not less than as follows, viz.—

When used in plank of  $2\frac{1}{2}$  inches, to be 7 inches long

—	3	”	8	”
—	4	”	10	”
—	5	”	12	”

and so on in proportion for plank of other thicknesses. The sizes of the bolts required in the several parts must not be less than is shown in Table D., following page 28.

\* Whenever metal fastenings are used in lieu of Treenails, this proportion must be observed.



47. In every case where the butt and bilge Bolts are not through and clenched, One Year will be deducted from the period which would otherwise be assigned in the classification of the vessel.

48. The Scantlings and dimensions for all sized vessels to be proportionately regulated, agreeably to a Table adopted by the Society, a copy of which is in the hands of each of the Surveyors. See Table B., following page 28.

49. Ships surveyed while building, in which *all the materials required for a Twelve Years' Ship shall have been used*, and most of the other requisites for that grade fulfilled, but which, from partial deficiencies, may not appear to be in all respects entitled to the full period, although superior to the description of a Ten Years' ship, may be marked in the Book thus, 11 A; thereby denoting that they are to remain on that grade *Eleven Years*, provided they be kept in a state of efficient repair.

50. Ships surveyed while building, in which the scantling and shifts of the timbers, the thickness and shifts of the planks, and size of fastenings may be the same as are required by the rules, and in which the description of materials prescribed in the annexed Tables shall also have been used, but in which the *alternate* sets of timbers shall not have been framed, nor the chocks wrought with a butt at each end, nor the frame so well squared as is required for Twelve Years' ships, but which shall be *in other respects* equal thereto, shall be marked "10 A;" thereby denoting that they are to remain on that grade for *Ten Years*, provided they be kept in a state of efficient repair.

51. In all other cases, ships surveyed while building, and constructed of the materials of good quality, hereinafter shown in the Tables Nos. 1, 2, and 3, will be allowed the several terms of years respectively appointed, provided they be kept in a state of efficient repair. All ships, *not built under Survey*, whether in the United Kingdom or abroad, for which a character may be claimed; must be placed in dry dock or laid on blocks in order that their bottoms may be seen and properly examined; they will also be required to have *their timbers completely exposed for examination, by a plank or listing (AS THE SURVEYOR MAY DIRECT) being taken out, either inside or outside, all fore and aft, on both sides, equal to one entire strake, at the first foothook heads, and another between decks; and a few treenails must likewise be driven out, so that the Surveyors, from actual inspection, may be satisfied whether or not they are of the quality and make prescribed by the Rules; and the same being thus ascertained, shall be reported to the Committee, and a character*

assigned. If of 400 tons and upwards, the Survey must be made by two Surveyors, and their report signed accordingly.

52. Ships built under a Roof, *which shall project at each end beyond the length, and on each side beyond the breadth, a quantity equal to half the breadth of the vessel*, shall have one year added to the period prescribed, provided they shall have been surveyed whilst building, and shall have occupied a period of not less than twelve months in their construction, and *not less than nine months (as part thereof) after the Frames shall have been completed.*

53. Ships built in the United Kingdom, or in Quebec after 1851, or St. John New Brunswick after 1853, and *not surveyed while building* by the Surveyors to this Society, or where the owners or builders may have refused to permit them to survey and examine the same at the several periods prescribed by the Rules, will be subjected to the minutest possible examination previously to assigning a character; but in all such cases One Year will be deducted from the period which would otherwise have been assigned, in consequence of their not having been submitted to such survey during their construction. In no case, however, will a higher grade than 10 A be assigned to ships built in the United Kingdom, which shall not have been surveyed while building.

#### CONTINUATION OF SHIPS A.

54. If, on the termination of the period of original designation, or if at any subsequent period not exceeding one-third of the number of Years assigned originally, or on Restoration, an Owner should wish to have his ship remain, or be replaced on the letter A (*vide section 59*), he is to send a written notice thereof to the Secretary, and the Committee shall then direct a Special Survey as follows to be held, consisting of not less than *two* competent persons to be appointed by the Committee, one of whom shall be a Surveyor the exclusive servant of the Society, namely,

#### SURVEY.

For the purpose of facilitating such survey, the ship shall be either placed in dry dock or laid on blocks, so that the keel may be examined, and be scraped from the light water-mark upwards, including the plank-sheer and waterways, so as to expose the surface of the plank to view.\*

\* If the Ship has been sheathed with wood over felt, fastened with copper or mixed metal nails, within a period of five years, and the bottom plank from the light water-mark upwards shall, when so sheathed, have been brightened, and the condition of the bolts and treenails and caulking ascertained, *and fully and favorably reported upon*; and provided that the sheathing which covers the binding bolts, and a strake of sheathing all fore and aft on each side under the wales be removed, and listings cut out at hood ends of stem and stern post; and the planking, fastenings, and caulking so exposed, shall prove to be in good condition, then, on application to the Committee, the stripping from the light water-mark upwards may be dispensed with.

If the ship has been recently coppered, and it shall appear to the Surveyors that stripping from



The hold to be cleared and proper stages made. The attention of the Surveyors shall then be particularly directed to the state of the upper or main deck and comings, the upper and lower deck bolts, and the outside planks through which they pass, the planksheers, waterways, and beams, so far as they can be examined; the hawse timbers, knight-heads, breasthooks, and transoms; the floors and kelsons; the keel and rudder; the planking outside, and the treenails passing through from the light water-mark upwards; the ceiling inside, and the frame and inner surface of the outside planking where it may be seen; and the sheer and general form of the ship; *and should any suspicious treenails or bolts appear, the same are to be driven out for inspection.* The Surveyors on these points shall transmit to the Committee a detailed report, accompanied by such observations as may occur to them, from inspection of the ship, or from information of the repairs she may have received. If from the report of such special survey the ship shall appear to be in a sound and efficient state, and to have preserved her original form unaltered, the Committee shall continue such ship on the letter A for such further period as they may think fit, not exceeding, however, one-third of the number of years which had been originally assigned. Ships so Continued shall be distinguished in the Register Book by the number of years for which the character is extended, being inserted separately under the number assigned on the original character, thereby denoting that the ship has been found on survey in such good and efficient order as to entitle her to be Continued for                    years. Ships built in the Colonies which shall have had the character A for four years, will be allowed a Continuation for *Two Years*, provided that, in addition to the above requisitions, and those prescribed by section 63, the Owners shall agree *to a strake in the Topsides, fore and aft*, on both sides, being also removed, and the ships, specially surveyed in that state, shall be found to be in a sound and efficient condition. The period assigned for Continuation will, upon all occasions, commence from the time the ship may have gone off the letter A, without regard to the date when the survey for this purpose may have been held.

In cases of the repair of ships for Continuation of character under the Rules, section 54, (*but in no other*) materials of an inferior description (but not below those prescribed for the six years' grade) may be permitted to be used in those parts which must of necessity, under the operation of the Rules, section 56, be *entirely removed* on a repair for Restoration; subject, however, to the ship-owner, in every instance, making a special application to the Committee for their previous sanction.

the light water mark to the wales may be dispensed with, the case will receive due consideration upon application to the Committee by the owner in writing.

## RESTORATION OF SHIPS TO THE CHARACTER A.

## FIRST RULE.

55. If, at any time before the expiration of two-thirds of the number of years *beyond* the period originally assigned, an owner be desirous to have his ship Restored to the A character, such Restoration (on his consenting to the special survey hereinafter described, to be held by two Surveyors, and performing the repairs found requisite) will be granted for a period not exceeding two-thirds of the time originally assigned, the same to be calculated from the date of such repairs.

*Requisites for Restoration.*

56. All the bolts in the range of each deck to be driven out, and the planks taken out; the upper deck waterways, and planksheers and spirketting, and the strake next the waterways on the lower deck in the midships, to be taken out; the sheathing to be entirely stripped off the bottom; *all the outside planking from the light water-mark upwards, to be scraped bright*; a strake in the upper course of the bottom, between the wales and the light water-mark fore and aft, and a plank in the ceiling at the floor heads on each side, to be taken out, the limbers to be clear, and the hooks forward to be exposed; and in that state the ship to be submitted to a special survey and examination, at which the attention of the Surveyors appointed by this Society is to be particularly directed to the state of the decks, the remaining plank of the topsides, the wales, upper courses, and treenails, and other fastenings; also to the state of the frame, hawse timbers, and knightheads, kelson, floors, foothooks, ceiling, and breasthooks, the rudder in all its parts and hangings; and if, after such examination, the Owner should consent to take out all planks, timbers, beams, knees, waterways, fastenings, and other parts that may be found defective, or objected to, and replace them with materials of the same species, or of equal quality with those of which the ship was originally constructed, such ships to be entitled to Restoration for a period proportionate to their real condition and the extent of the repairs performed; or if timber of an inferior description, or second-hand English or African Oak or Teak be used, then for a period not exceeding that for which such materials would have entitled a new ship to stand A according to the tables, subject in either case to the ship being at all times thereafter kept in a state of efficient repair.

## SECOND RULE.

57. If, at any age of a vessel, an Owner be desirous to have his ship



Restored, such Restoration (on his consenting to the special survey herein-after described, to be held by two Surveyors, and performing the repairs thereby found requisite) will be granted for so long a period as may be deemed expedient by the Committee, not exceeding, in any case, the term of eight years.

*Requisites for Réstoration.*

58. The whole of the outside plank of the vessel to be taken off as low as the second foothook heads, and the remainder of the planking, either outside or inside, together with all the decks, to be removed, *so as to expose the timbers of the frame entirely to view*, and in that state the ship to be submitted to a special survey and examination, by the Surveyors appointed by this Society; and if, after such examination all timbers, beams, knees, kelsons, transoms, breasthooks, remaining plank, inside or outside, or other parts found to be defective, be replaced with materials of the same species, or of equal quality with those of which the ship was originally constructed, and all the treenails driven out and renewed, such ship may be Restored. But if timber of an inferior description, or second-hand English or African Oak or Teak be used, then for a period not exceeding that for which such materials would have entitled a new ship to stand A according to the tables, subject, in either case, to the ship being at all times thereafter kept in a state of efficient repair.

59. Ships which have been *Restored* shall be entitled to Continuation, subject to the same conditions of survey and examination as are prescribed for ships proposed to be Continued at the expiration of the period first assigned to them (Sec. 54); but in like manner, the term of such extended Continuance shall be limited to a period not exceeding one-third of the number of years for which the ships may respectively have been *Restored*, without any reference whatever to the period originally assigned to them. At the termination of the several periods assigned to ships for remaining on the character A, they will be reduced to the Description designated by the diphthong *Æ*. But if during the *last year* of the period assigned to them, the Owners of a ship shall, in consequence of her being about to proceed on a distant foreign voyage, apply to have her surveyed for continuation on the letter A, or for the diphthong *Æ* with the Asterisk, a special survey shall be held conformably to the Rules, sections 54 or 60, as the case may be: and if from the report of such special survey, the ship shall appear to be in all respects in a sound and efficient state, such as is required by those Rules, the Committee shall, from the period at which the ship's character would

terminate, continue her on the letter A, or assign to her the character \*Æ (in red) in accordance with the Rules referred to.

### SHIPS Æ ASTERISK, IN RED,

60. Will consist of all ships that have passed the periods which have or might have been assigned to them for the character A, or for Continuation, or for Restoration, and shall be found on survey to be of superior description, being fit for the conveyance of dry and perishable goods to and from all parts of the world, shall be distinguished by inserting their characters in Red with an asterisk thus prefixed, \*Æ.—But in all cases in which the owner may claim this distinction, the ship must undergo a special survey by two surveyors, to be appointed in every instance by the Committee, and be subject in other respects to a compliance with the undermentioned requisitions of

#### SURVEY.

The ship to be either placed in dry dock or laid on blocks, so that the keel may be examined, and be scraped from the light water-mark upwards, including the planksheer and waterways, so as to expose the surface of the plank to view.\* The hold to be cleared, and proper stages made both inside and outside. The attention of the surveyors shall then be particularly directed to the state of the upper or main deck and comings, the upper and lower deck bolts, and the outside planks through which they pass, the planksheers, waterways, and beams, so far as they can be examined; the hawse timbers, knightheads, breasthooks, and transoms; the floors and kelsons; the keel and rudder; the planking outside, and the treenails passing through from the light water mark upwards; the ceiling inside, and the frame and inner surface of the outside planking where it may be seen; and the sheer and general form of the ship; and should any suspicious treenails or bolts appear, the same are to be driven out for inspection.

And to entitle them to continue this character, such vessels will be required, in addition to the usual annual survey, to undergo a special re-survey, as prescribed above, within a period (from the date of the last special re-

\* If the ship has been sheathed with wood over felt, fastened with copper or mixed metal nails, within a period of five years, and the bottom plank from the light water-mark upwards shall, when so sheathed, have been brightened, and the condition of the bolts and treenails and caulking ascertained, and fully and favourably reported upon; and provided that the sheathing which covers the binding bolts, and a strake of sheathing all fore and aft on each side under the wales be removed, and the listings cut out at hood ends of stem and stern post; and the planking, fastenings, and caulking so exposed, shall prove to be in good condition, then, on application to the Committee, the stripping from the light water-mark upwards may be dispensed with.

If the ship has been recently coppered, and it shall appear to the Surveyors that stripping from the light water mark to the wales may be dispensed with, the case will receive due consideration upon application to the Committee by the owner in writing.



survey) not exceeding *two-thirds* of the several terms of years originally assigned to them, or earlier, if in the judgment of the Surveyors, upon a careful examination of the ship, the same shall appear to them to be necessary. With respect to the materials to be used in the repair of vessels, the Owners of which may apply for a Special Survey for the *Asterisk*, not any will be permitted of a description inferior to the materials contained in the *Tables for Vessels of the Six Years' grade*, or to those prescribed by the *Tables for New Ships* of higher character, for periods equal to two-thirds of the several terms of years of original designation of the ships undergoing repair.—Those ships, however, the original construction of which may not have entitled them to the A character for a longer period than Five Years, will not be allowed the distinction of the asterisk. Whenever it shall appear to the Surveyors that a vessel classed *Æ with the asterisk* shall no longer be in a condition to deserve that *distinction*, notice of the proposal to reduce her shall be given *in writing* to the Owner, Master, or Agent, in the same manner as is prescribed by the rules, section 21, page 7.

#### SHIPS *Æ*, IN BLACK,

61. Will consist of ships that have passed the prescribed age for the A Character, but have not undergone the repairs which would have entitled them to be Continued or Restored; or having been Continued or Restored, and the additional period thus assigned expired, and of ships of the *Æ* asterisk Character, in Red, and also such ships as have never had an original character, which shall be found on survey fit for the conveyance of dry and perishable goods on *shorter voyages*, shall be distinguished by the diphthong *Æ* in Black; and a careful survey will be required to be made *annually*, or on the return of the ship from every foreign voyage, by one of the Surveyors to this Society, who is to state distinctly and separately the actual condition of the *upper deck fastenings, waterways, spirketting, planksheers, topsides, upper deck with its appendages, lower deck fastenings, wales, counter, plank, and treenails outside to the water's edge, rudder, windlass and capstan, beams, breasthooks, transoms, and timbers*; but if not surveyed within twelve months, such ship having been during that time in some port in the United Kingdom, the character will be omitted until such survey be held; or, as the case may be, she will be allowed to pass into the class E.

#### BRITISH NORTH-AMERICAN BUILT SHIPS, AND FIR SHIPS.

62. Ships built in the British North-American Colonies, and all ships wherever built, the frames of which are composed of *Fir*, of 400 tons and

above, shall, in order to entitle them to be classed in the Register Book of the Society, be secured in their bilges by the application of iron knee riders, or hanging knees and riders to cover the joints of the floor and foothook heads, to extend from the height of the hold beams to the floors so as to receive not less than two bolts in a substantial part of the floors ; the number of iron knees and riders to be not less than one of each to every hold or lower deck beam on each side. The knees to be connected with the riders or not, at the option or convenience of the owners ; but if not so connected, the side arms of the knees are to be of the length and to be fastened as prescribed in Table F. The number of knees to each deck, and of riders, also their dimensions, and number of bolts, are fully explained in Table F. In cases of refusal, the words " not fastened as per rule, section 62," will be inserted against the vessel's name. All ships built in the Colonies will be considered as " iron fastened " in their centre lines, unless it shall be satisfactorily shown to the contrary, either by the exposure of some of the bolts, or by a certificate to be produced from the builders.

63. All British North-American built ships, which have gone, or may go off the List of Ships of the A character, or which may be of an age exceeding the period for which they might have had claims to be put upon that grade (whether classed or not), shall, as from time to time they come under examination, be subjected to a careful survey, to be made by one of the Surveyors to this Society ;—and no further character shall be assigned them unless a survey shall be held as follows ; and planking, either inside or outside, at the discretion of the Surveyors, in quantity equal to *one entire strake* fore and aft on both sides, shall be removed ; to be taken out in mid-ships immediately above the turn of the bilge, and *at such height* forward and aft as may, in their judgment, best expose the timbers of the frame to view ; that a special report of the state of these timbers, and of the general state and condition of the upper deck fastenings, waterways, spirketting, planksheers, topsides, upper deck with its appendages, lower deck fastenings, wales, counter, plank and treenails outside to the water's edge, rudder, windlass and capstan, beams and breasthooks, shall be transmitted by the Surveyors to the Committee ; and on the receipt of such report the character shall be assigned. If the diphthong character be then assigned, it shall be continued (subject to an annual survey) for a period not exceeding the number of years originally assigned ; at the expiration of which the character will be discontinued, unless a similar survey and examination of the frame be again submitted to.



## SHIPS E,

64. Will comprise all ships which shall be found on survey fit for the conveyance of cargoes not in their nature subject to sea damage *on any voyage*.

65. Subject to occasional inspection, at least once in every two years, ships will continue in this class so long as their condition shall, in the opinion of the Committee, entitle them thereto.

## SHIPS I,

66. Will comprise ships which shall be found on survey fit for the conveyance, *on shorter voyages* (not out of Europe), of cargoes in their nature not subject to sea-damage.

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67. The Bottom of every ship is to be CAULKED once in every five years, unless wood-sheathed and felted, and then once in every seven years, except in the case of *Teak-built ships*, upon which a special survey may have been requested, and the Surveyors having ascertained, by the removal of a strake of sheathing fore and aft under the wales, and a strake at the first foothook heads, and by causing listings to be cut out at the wood's ends, that such caulking is not required, the same may then be dispensed with. If any ship shall be stripped within the periods above mentioned, her bottom is to be caulked, *if necessary*.

68. In all cases in which ships may be Doubled, doubling of not less than the thicknesses hereinafter mentioned will be required, the same to be properly wrought and fastened as follows: in every instance the doubling is to be at least single fastened either with treenails or with bolts, and a through bolt in every butt. If treenails be used, every treenail must, if practicable, be a through fastening; and if bolts be used, then one-sixth of them from the lower part of the bilge upwards must be through and clenched on the ceiling in addition to the butt bolts.

The throat bolts of iron Knees, and the bolts of iron Hooks, Crutches, and Pointers, must be renewed through the doubling.

The thickness of the doubling for the wales and bottom, on ships

Under 400 tons to be not less than ... 2 inches

of 400 „ and under 600 tons ... 2½ „

of 600 „ and above ... 3 „

On the Topsides of ships not exceeding 300 tons, the thickness may be 1½ inches.

No ship hereafter doubled, shall be entitled to the asterisk or any higher class, unless it shall be ascertained at the time of doubling that the frame is capable of securely retaining the fastenings.

#### IRON-FASTENED SHIPS.

69. All ships although iron-fastened (except as hereinafter mentioned) shall be classed in the same manner as copper-fastened ships, so long as they remain unsheathed with copper, provided they are, in all other respects, constructed in accordance with the Rules; but when sheathed with copper over the iron fastenings, the words "Coppered over Iron Bolts" shall be added to the character in the Register Book, and continued until the ship be thoroughly copper-fastened.

70. Ships built in India, although fastened with iron, shall be permitted to be copper-sheathed without any mark being placed in the Book, provided the bottom be felted or chunamed and wood-sheathed, and subjected to a careful examination of the iron fastenings on every occasion on which the sheathing is stripped off, for which purpose some of the bolts and nails are to be taken out of the lower part of the bottom, and to be seen by the Surveyor; but no such ship shall be permitted to continue either on the A or on the \*Æ in red class for a longer period than one-half the number of years beyond the term originally assigned for her remaining on the A character, unless the bottom shall have been doubled, or the whole of the iron fastenings taken out or properly secured, and the bottom refastened with bolts, or tree-nails, or both, including the middle line and breasthook and crutch bolts.

#### ANCHORS, CABLES, AND STORES.

71. All vessels are required to have their masts, spars, and standing rigging in good order, and sails in sufficient number and good condition, and every ship is to be supplied with a good hempen stream-cable or tow-line of sufficient size and length, and with at least one good warp; and all vessels are to be provided with anchors of proper weight, and cables of approved quality and size, properly tested, in number and length according to the under-mentioned scale :—

#### ANCHORS.

72. All vessels under 200 tons to have at least two bower anchors, and all vessels of 200 tons and above, to be provided with at least three bower anchors.



*Cables.*

	Tons.	Fathoms.
73. All vessels ..... under 150 to have at least 150 if chain.		
— of 150 and under 250 .....	180	do.
— 250 .....	200	do.
— 350 .....	240	do.
— 500 .....	270	do.
— 700 and upwards .....	300	do.

A Certificate of all new Chains having been tested, and of the strain applied to them, must be produced before a Ship is classed. The amount of strain applied should be marked on each length.

74. In all cases where hempen cables are used, one-sixth more in length will be required.

*BOATS.*

75. All vessels under 150 tons to be provided with one good Boat; and every vessel of 150 tons and above to have a suitable number, and with not less than two good boats.

76. The efficient state and condition of ships' anchors, cables, and stores, will be designated by the figure 1; and where the same are found insufficient in quantity, or defective in quality, by the figure 2.

*SHIPS NAVIGATED BY STEAM.*

77. All sea-going vessels navigated by *Steam* shall be required to be surveyed *twice in each year*, when a character will be assigned to them according to the report of survey.

78. That with respect to the Boilers and Machinery, the owners are required to produce to the Surveyors at the above-directed surveys, a certificate from some competent *Master Engineer*, describing their state and condition at those periods; and to which certificate it is desirable there should be added a description of the particulars of the same, as far as may be practicable, in the manner and form annexed, No. 8; to be appended to the report of survey, and delivered to the Committee, who will thereupon insert in the Register Book the letters "M.C." denoting that the boilers and machinery have been inspected and certified to be in good order and safe working condition; but if no certificate of their condition be furnished by the Owner or Master, then no character can be assigned for the machinery.

79. *HULL*:—The Surveyors are directed to examine and report the scantling of timbers, plank, and fastenings, and to state where built, and by whom, in the same manner as directed for sailing vessels.

The following relaxation from the Rules applicable to sailing vessels will be allowed in favour of steamers.

Fir (to be either Pitch Pine, Baltic Red Fir, or American Red Pine), Larch, Hackmatack, or Juniper, may be used for upper deck beams, to an extent not exceeding *one-half* the number of beams required according to the vessel's tonnage.

The same materials may be used in the outside planking from the first foot-hook heads upwards, excepting for the wales, sheerstrakes, and plank-sheers.

The same materials may be likewise used in the inside planking, excepting for the bilge planks, shelf-pieces and stringers, and clamps.

Steam-vessels built in all other respects in conformity with the annexed tables shall be classed for the terms of years therein respectively prescribed, subject to the following conditions:—

That the Rule requiring a survey 'twice a year' be rigidly enforced, and that whenever the boilers are taken out, the vessel shall be subjected to a particular and special survey, in order to ascertain her general condition, and particularly the state of the Fir, or other materials herein allowed to be used.

That unless such surveys be held, the Characters which may have been assigned to steam-vessels shall be struck out annually on reprinting the Register Book.

80. SCANTLINGS:—The scantlings for a steam-vessel under 300 tons register including the engine room, are to be deemed sufficient, if equal to those required by the scale prescribed in the Rules of this Society for a sailing vessel of *two-thirds* of the total tonnage of such steam-vessel.

81. But for a steam-vessel *above* 300 tons register, including the engine room, the scantlings are to be equal to those required by the scale for a sailing vessel of *three-fourths* of the total tonnage of such steam-vessel.

82. FLOORS:—Where the vessel is not *filled in solid to the floor-heads in the engine room*, an exception will be specially made against any reduction of the scantling of the *floors*, which in such cases will not be permitted to be upon the reduced scale of two-thirds or three-fourths of the dimensions for the *scantling* of sailing vessels, as before stated; but the *floors* will then be required to be equal to the dimensions set forth in the Rules for ships of the tonnage of the steam-vessel, including the engine room.

Vessels fitted with Auxiliary steam power are considered to be sailing vessels (not steamers), and will not be allowed any exception as to their scantlings.

83. The Surveyors are required to report the number, size, length, fastenings, and mode of arrangement of the engine and boiler *sleepers*, and the



description of timber of which they are composed, and whether diagonally trussed with wood or iron, and to what extent; the length, size, and fastenings of shelf-pieces and paddle-beams; and whether the vessel be constructed with sponcings, and how they are formed; and to give the length and shifting of the plank outside and inside.

84. **MATERIALS AND STORES:**—The Surveyors are to examine and report the number and description of the masts, sails, anchors, cables, hawsers, warps, and boats, as directed to be done for sailing vessels; but the anchors and cables will not be required to exceed in weight and length those of a sailing vessel of two-thirds of the total tonnage of the steam-vessel.

85. The Surveyors are to be particular in examining and reporting the condition of the boats of all vessels employed in carrying passengers.

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The foregoing Rules having been amended or altered in sections 27, 46, 51, 54 and 60, and in conformity with the several Resolutions passed by the Committee, the attention of Ship-owners and Ship-builders is respectfully invited to the consideration of these Rules, as well as the amended Tables A and B.

# N THE TIMBERING AND PLANKING OF SHIPS.

Sides, Sheer- Lines and Knees	Upper deck Waterways	INSIDE PLANK.			
		Limber Strakes and Bilge Strakes.	Ceiling: Lower Hold and between Decks.	Shelf Pieces and Clamps.	
12	12	12	12	12	English, African, and Live Oak, East-India Teak, and Morung Saul
12	12	12	12	12	Greenheart, Morra, and Iron Bark
10	12	12	12	12	Mahogany of Hard Texture and Cuba Sabieu and Pencil Cedar
9	10	12	12	12	Adriatic, Spanish, and French Oak, S. American, Australasian Hard Wood
10	12	12	12	12	† Red Cedar
8	8	10	10	10	Other Continental White Oak and Spanish Chesnut
7	7	9	9	9	North American White Oak and American Sweet Chesnut
7	10	7	8	8	Larch, Hackmatack, Tamarac, and Juniper
9	10	9	9	9	Pitch Pine
—	5	5	5	4	Second-hand English or African Oak and East-India Teak
7	10	7	8	8	Cowdie
7	10	7	8	7	Baltic and American Red Pine
—	—	5	5	4	English Ash
—	—	5	5	4	Foreign Ash
5	5	7	6	6	American Rock Elm
4	4	5	5	4	European and American Grey Elm
4	4	5	5	4	Black Birch
4	4	5	5	4	Spruce Fir
—	—	5	5	4	English Beech
4	5††	5	5	5	Yellow Pine

Admitted alternately in Timbers of the Frame for 10 A.

From the top of the Limber Strake to the top of the Upper Deck Beams.  
Ships of the 7 years' grade.

Secured independently of the Waterways.

For relaxation in favour of Steam Vessels, *vide* Rules, page 24.



description of timber of which they are composed, and whether diagonally trussed with wood or iron, and to what extent; the length, size, and fastenings of shelf-pieces and paddle-beams; and whether the vessel be constructed with sponcings, and how they are formed; and to give the length and shifting of the plank outside and inside.

84. **MATERIALS AND STORES:**—The Surveyors are to examine and report the number and description of the masts, sails, anchors, cables, hawsers, warps, and boats, as directed to be done for sailing vessels; but the anchors and cables will not be required to exceed in weight and length those of a sailing vessel of two-thirds of the total tonnage of the steam-vessel.

85. The Surveyors are to be particular in examining and reporting the condition of the boats of all vessels employed in carrying passengers.

The foregoing Rules having been amended or altered in sections 27, 46, 51, 54 and 60, and in conformity with the several Resolutions passed by the Committee, the attention of Ship-owners and Ship-builders is respectfully invited to the consideration of these Rules, as well as the amended Tables A and B.



TABLE A.

EXHIBITING THE NUMBER OF YEARS ASSIGNED TO THE DIFFERENT DESCRIPTIONS OF TIMBER, OF GOOD QUALITY, AS USED IN THE TIMBERING AND PLANKING OF SHIPS.

	TIMBERING.									OUTSIDE PLANK.						INSIDE PLANK.			
	Floors.	First Foothooks.	Second Foothooks.	Third Foothooks and Top Timbers.	Keelson.	Stem and Stern Post.	Transoms, Knight-heads, Hawse-Timbers, Apron, and Deadwood*	Beams and Hooks.	Knees.	Keel to First Futtock Heads.	First Futtock Heads to Light Mark.	Light Mark to Wales.	Wales and Black-Strakes.	Topsides, Sheer-strakes and Plank-sheer.	Upper deck Waterways.	Lumber Strakes and Bilge Strakes.	Ceiling: Lower Hold and between Decks.	Shelf Pieces and Clamps.	
English, African, and Live Oak, East-India Teak, and Morung Saul	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	English, African, and Live Oak, East-India Teak, and Morung Saul
Greenheart, Morra, and Iron Bark	12	12	12	12	12	10	10	12	12	12	12	12	12	12	12	12	12	12	Greenheart, Morra, and Iron Bark
Mahogany of Hard Texture and Cuba Sabicu and Pencil Cedar	10	10	10	10	10	10	10	12	12	12	12	10	10	10	12	12	12	12	Mahogany of Hard Texture and Cuba Sabicu and Pencil Cedar
Adriatic, Spanish, and French Oak S American, Australasian Hard Wood	10	10	9	9	10	9	9	10	10	12	12	10	9	9	10	12	12	12	Adriatic, Spanish, and French Oak, S American, Australasian Hard Wood
† Red Cedar	9	9	9	9	10	9	9	10	10	12	12	12	10	10	12	12	12	12	† Red Cedar
Other Continental White Oak and Spanish Chesnut	9	9†	7	7	9	7	7	8	8	12	12	9	8	8	8	10	10	10	Other Continental White Oak and Spanish Chesnut
North American White Oak and American Sweet Chesnut	8	8†	7	7	8	7	7	7	7	12	10	8	7	7	7	9	9	9	North American White Oak and American Sweet Chesnut
Larch, Hackmatack, Tamarac, and Juniper	7	7	7	7	8	7	7	7	7	12	10	8	7	7	10	7	8	8	Larch, Hackmatack, Tamarac, and Juniper
Pitch Pine	7	7	7	7	9	6	6	8	8	12	12	9	8	9	10	9	9	9	Pitch Pine
Second-hand English or African Oak and East-India Teak	7	7	6	6	6	5	6	6	6	—	—	—	—	—	5	5	5	4	Second-hand English or African Oak and East-India Teak
Cowdie	6 ¶	6	6	7	7	6	6	7	7	10	9	8	7	7	10	7	8	8	Cowdie
Baltic and American Red Pine	5	5	5	7	7	5	5	7	7	9	9	8	7	7	10	7	8	7	Baltic and American Red Pine
English Ash	7	6	5	5	5	4	4	5	5	10	7	4	—	—	—	5	5	4	English Ash
Foreign Ash	5	5	4	4	5	4	4	5	5	10	7	4	—	—	—	5	5	4	Foreign Ash
American Rock Elm	6 ¶	6	5	5	6	5	5	5	5	12§	8	6	5	5	5	7	6	6	American Rock Elm
European and American Grey Elm	5	5	4	4	4	4	4	5	5	12§	8	5	4	4	4	5	5	4	European and American Grey Elm
Black Birch	5 ¶	5**	4	4	4	4	4	4	4	10	7	4	4	4	4	5	5	4	Black Birch
Spruce Fir	5	5	4	4	4	4	4	4	7	6	5	4	4	4	4	5	5	4	Spruce Fir
English Beech	5	4	—	—	4	—	—	—	—	12§	8	4	—	—	—	5	5	4	English Beech
Yellow Pine	—	—	—	4	4	4	4	4	4	6	5	5	5	4	5††	5	5	5	Yellow Pine

\* This Table applies as to the Deadwood so far as regards the Material to be used from the height of two feet above the rabbet of the Keel. † Live Oak and Red Cedar admitted alternately in Timbers of the Frame for 10 A.

‡ If the First Foothooks run up above the Light Watermark, the use of Foreign White Oak is allowed for the 7 years' grade only.

§ The use of Elm and Beech, in Ships above the 8 years' grade, to be restricted to a height from the lower part of the Main Keel, of one-third of the internal depth of the Ship measured, in midships, from the top of the Limber Strake to the top of the Upper Deck Beams.

¶ Black Birch, Beech, American Rock Elm, and Cowdie, allowed for Floors in Midships, to an extent not exceeding one-half the entire length of the Keel, in Ships of the 7 years' grade.

\*\* Black Birch allowed for First Futtocks amidships, to the same extent in Ships of the 6 years' grade.

†† Yellow Pine allowed for Waterways of Upper Deck in Ships of the 7 years' grade, if properly fastened, as prescribed in Table B, and provided the Beams are well secured independently of the Waterways.

White Cedar allowed for Third Foothooks and Toptimbers in Ships of the 7 years' grade.

MEM.—The word "English" includes Timber the growth of the United Kingdom. — For relaxation in favour of Steam Vessels, vide Rules, page 24.



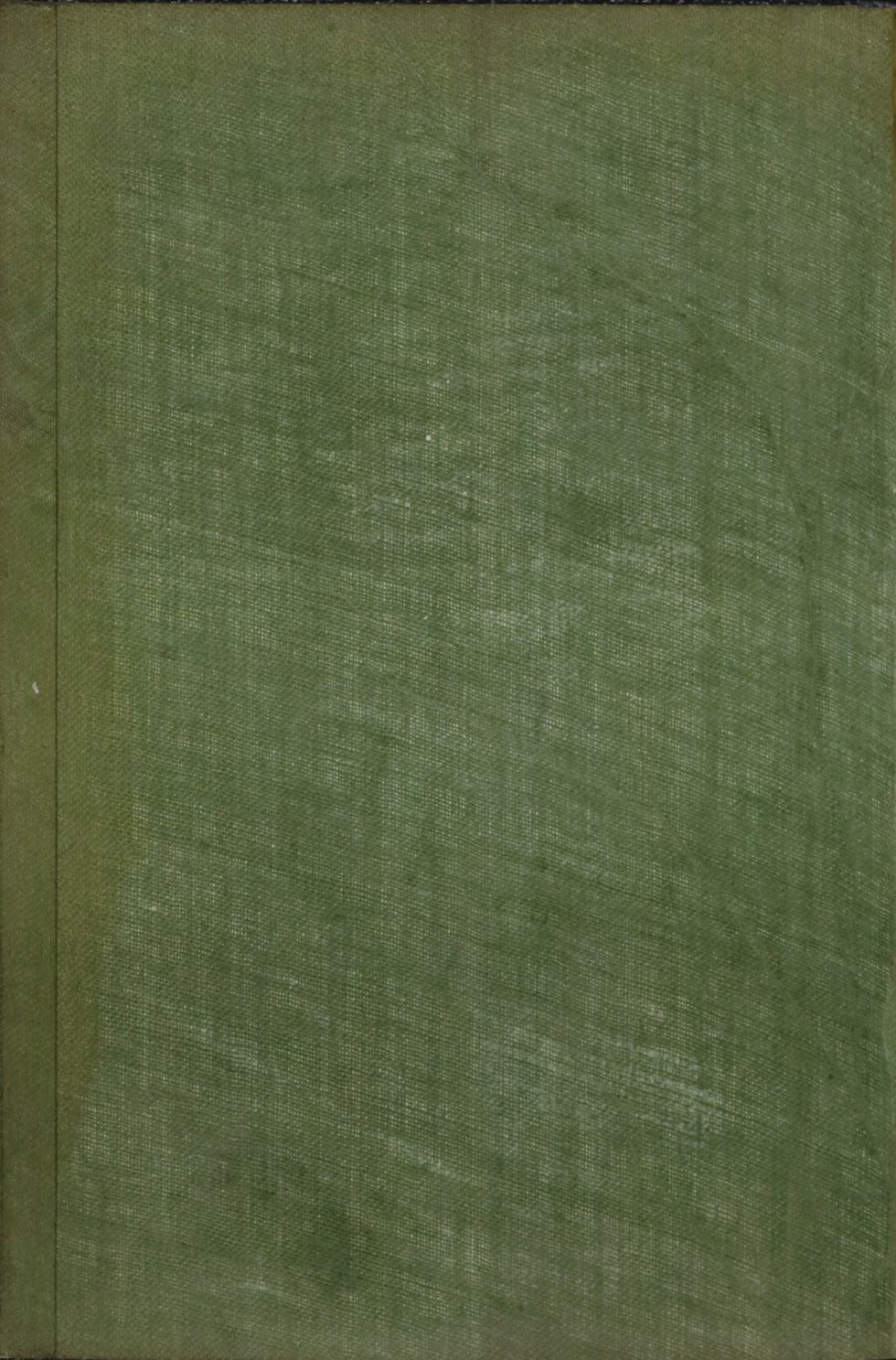




TABLE B.

MINIMUM DIMENSIONS OF TIMBERS, KEELSON, KEEL, PLANKING, &c.

TONNAGE . . . . . TONS . . .	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1050	1150	1250	1350	1500	1750	2000
TIMBER AND SPACE . . . . . INCHES . .	18	19	20	21½	23	24¼	25¾	27¼	28½	30	30¼	30½	31	31¼	31½	31¾	32¼	23½	32¾	33¼	33½	33½	33¾	34	34½	35
Floors, sided and moulded at Keelson, if square . . . . .	7	7½	8	8¾	9½	10¼	11	11¾	12¼	13	13¾	13¼	13½	13½	13¾	13¾	14	14	14¼	14½	14¾	15	15¼	15¼	15½	15¾
Double Floors, sided and moulded at Keelson, if square . . . .	6	6½	7	7¾	8½	9¼	10	10½	11¼	12	12¼	12¼	12½	12½	12¾	12¾	13	13	13¼	13½	13¾	14	14¼	14¼	14½	14¾
1st Futtocks, sided and moulded at Floor Heads, if square . .	6	6½	7	7¾	8¼	8¾	9¼	10	10½	11	11¼	11½	11¾	11¾	12	12¼	12¼	12½	12¾	13½	13½	13¾	14¼	14¼	14½	14¾
2nd Futtocks, sided, if square . . . . .	5½	6	6½	7	7½	8	8½	9	9½	10	10¼	10½	10¾	10¾	11	11¼	11¼	11½	11¾	12½	12½	12¾	13¼	13½	13½	13¾
3rd Futtocks and Long Top Timbers, sided, if square . . . . .	5½	5¾	6	6½	7	7¼	7¾	8¼	8½	9	9¼	9½	9¾	9¾	10	10¼	10¼	10½	10¾	11¼	11½	11¾	12¼	12¼	12½	12¾
Top Timbers (Short) sided, if square . . . . .	..	..	..	..	..	..	..	..	..	9	9¼	9¼	9¼	9½	9½	9½	9¾	9¾	10	10	10¼	10½	10¾	10¾	11	11¼
Top Timbers, moulded at heads, if square . . . . .	4	4½	4¾	5	5	5¼	5½	5¾	6	6	6¼	6¼	6¼	6½	6¾	6¾	7	7	7¼	7¼	7½	7¾	8¼	8½	8¾	9
Breasthooks & Wing Transom, sided & moulded in the middle	8	8½	9	9¾	10¼	10¾	11¼	12	12½	13	13¼	13¼	13½	13½	13¾	13¾	14	14	14¼	14½	14¾	15	15¼	15¼	15½	16
Keel, Stem, Apron, and Sternpost, sided and moulded . . . . .	8	9	10	10¾	11½	11¾	12½	13	13½	14	14¾	14¼	14½	14½	14¾	14¾	15	15	15¼	15½	15¾	16	16¼	16½	16¾	17
Keelson, sided and moulded . . . . .	9	10	11	11¾	12¼	12¾	13¼	14	14½	15	15¼	15¼	15½	15½	15¾	15¾	16	16	16¼	16½	16¾	17	17¼	17½	17¾	18
Wales . . . . .	3	3½	4	4¼	4¼	4½	4¾	4¾	5	5	5	5	5¼	5¼	5¼	5½	5½	5½	5¾	6	6	6	6¼	6½	6¾	7
*Bottom Plank, from Keel to Wales . . . . .	2	2¼	2½	2¾	3	3¼	3½	3¾	3¾	4	4	4	4	4	4	4¼	4¼	4¼	4¼	4½	4½	4½	4½	4½	4¾	5
Sheer Strakes, Topsides, Upper Deck Clamp where there is no Shelf fitted, and Lower Deck Clamp with a Shelf . . . .	2¼	2½	3	3¼	3½	3½	3¾	3¾	4	4	4	4	4	4¼	4¼	4¼	4¼	4¼	4½	4½	4¾	4¾	5	5¼	5½	5½
Ceiling below Hold Beam Clamp . . . . .	1½	1¾	2	2¼	2½	2¾	2¾	2¾	3	3	3	3¼	3¼	3¼	3¼	3½	3½	3½	3½	3¾	3¾	4	4	4¼	4½	4½
†Waterway, { Hardwood . . . . .	3½	4	4½	5	5	5½	5½	6	6	6½	6½	6½	7	7	7	7	7½	7½	7½	7½	7½	8	8	8½	8½	9
{ Fir . . . . .	4	4½	5	5½	6	6½	6½	7	7½	8	8	8	8½	8½	8½	8½	9	9	9	9	9	9½	9½	9½	9½	10
Ceiling betwixt Decks and Sheer Strake of Poop and Forecastle . . . . .	1½	1¾	2	2	2¼	2¼	2¼	2½	2½	2½	2½	2½	2½	2¾	2¾	2¾	2¾	2¾	2¾	2¾	3	3	3	3¼	3½	3½
Bilge Plank, inside, and Limber Strake . . . . .	2½	2¾	3	3¼	3¼	3½	3¾	3¾	4	4	4¼	4¼	4½	4½	4¾	4¾	5	5	5¼	5½	5¾	6	6¼	6¼	6½	7
Lower Deck Clamp where there is no shelf fitted, and Spirketting . . . . .	..	..	3	3¼	3½	3¾	4	4	4¼	4½	4½	4¾	4¾	4¾	4¾	4¾	5	5	5	5¼	5¼	5½	5½	5½	5¾	6
Upper Deck Clamp where a shelf is also fitted . . . . .	2	2¼	2½	2½	2¾	2¾	2¾	2¾	3	3	3	3¼	3¼	3¼	3¼	3½	3½	3½	3½	3¾	3¾	4	4	4¼	4½	5
Planksheer . . . . .	2	2¼	2½	2¾	3	3¼	3½	3¾	3¾	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4¼	4½	5
Flat of Upper Deck . . . . .	2½	2½	2½	2½	2½	3	3	3	3	3¼	3½	3½	3½	3½	3½	3½	3½	3½	3½	4	4	4	4	4	4	4
Scarphs of Keelson without Rider . . . . .	ft. in. 4 6	ft. in. 4 9	ft. in. 5 0	ft. in. 5 3	ft. in. 5 6	ft. in. 5 10	ft. in. 6 2	ft. in. 6 6	ft. in. 6 9	ft. in. 7 0	ft. in. 7 0	ft. in. 7 0	ft. in. 7 0	ft. in. 7 0	ft. in. 7 3	ft. in. 7 3	ft. in. 7 3	ft. in. 7 3	ft. in. 7 6	ft. in. 7 6	ft. in. 7 9	ft. in. 7 9	ft. in. 8 0	ft. in. 8 0	ft. in. 8 0	ft. in. 8 0
Ditto, where Rider Keelson is added, also Scarphs of Keel . .	4 0	4 3	4 6	4 9	5 0	5 2	5 4	5 6	5 9	6 0	6 0	6 0	6 0	6 0	6 3	6 3	6 3	6 3	6 6	6 6	6 9	6 9	7 0	7 0	7 0	7 0

Moulding of Futtocks and Top Timbers to diminish gradually from size given at Floor Heads to that at Top Timber Heads. See Rule, sec. 38.

† This Depth of Waterway for Faying Surface against Timbers is required, below the underside of the Planksheer, to receive in and out through Bolts at alternate Timbers, with alternate through bolts in Shelf and in Clamp where there is no Shelf.

TABLE C.

SIDING AND MOULDING OF BEAMS.  
See Section 41.

LENGTH OF BEAM amid-ships.	HOLD BEAMS		DECK BEAMS	
	sided and moulded.	moulded at ends.	sided and moulded.	moulded at ends.
Feet	Inches.	Inches.	Inches.	Inches.
10	—	—	4½	3¾
11	—	—	5	4
12	—	—	5½	4½
13	—	—	5½	4½
14	—	—	5¾	4¾
15	8	6¾	6½	5½
16	8½	7	6½	5½
17	8¾	7½	6¾	5½
18	9½	7¾	7	5¾
19	9½	8	7½	6
20	10	8½	7½	6½
21	10½	8¾	7¾	6½
22	10½	9	8	6½
23	11	9½	8½	6¾
24	11½	9½	8½	7
25	11¾	9¾	8½	7½
26	12	10	8¾	7½
27	12½	10½	9	7½
28	12½	10½	9	7½
29	12¾	10¾	9½	7¾
30	13	11	9½	8
31	13½	11½	9½	8
32	13½	11½	9¾	8½
33	13¾	11½	10	8½
34	14	11¾	10	8½
35	14½	12	10½	8½
36	14½	12½	10½	8½
37	14¾	12½	10½	8¾
38	15	12½	10½	8¾
39	15½	12¾	10½	9
40	15½	13	10¾	9

N. B.—The size of Orlop Beams to be the mean of the sizes here prescribed.

The siding and moulding of all the Beams to be the same as those amidships, except those at the after end of the Ship, which may be reduced in proportion to their diminished length.  
Max.—When Spruce or Yellow Pine is used for Beams the dimensions are to be increased.—See sec. 40, page 12.







TABLE C.

SIDING AND MOUNTING OF  
See Section 41.

TABLE D.

SIZES OF BOLTS, PINTLES OF RUDDER, AND TREENAILS.

TABLE B.

MINIMUM DIMENSIONS OF TIMBER  
Section 46. Page 14.

TABLE E.

NUMBER OF HANGING KNEES

Section 41. Page 12.

TONNAGE.....	50	100	150	200	250	300	350	400	450	500	700	900	1350	Tons.	To Hold Beams.	10 Upper Deck Beams.
Heel-Knee, Stenson, and Deadwood Bolts .....	7/8	15/16	1	1	1 1/16	1 1/8	1 1/8	1 3/16	1 1/4	1 1/4	1 5/16	1 3/8	1 1/2	150	4	6
Bolts in Scarphs of Keel,* Arms of Breast Hooks, Pointers, Crutches, Riders, Hanging and Lodging Knees to Hold or Lower Deck Beams (except in and out Throat Bolts of Hanging Knees, which must be larger), also in and out Bolts of Shelf, Clamp, and Waterway of Hold or Lower Deck Beams, and the in and out Throat Bolts of Upper Deck Hanging Knees .....	5/8	11/16	3/4	3/4	13/16	7/8	7/8	15/16	15/16	1	1 1/8	1 3/16	1 1/4	200	5	7
Keelson Bolts (one through Keel at each Floor), Throats of Transoms, Throats of Breasthooks, and Throats of Hanging Knees to Hold or Lower Deck Beams .....	3/4	13/16	7/8	7/8	15/16	1	1	1 1/16	1 1/8	1 1/8	1 3/16	1 1/4	1 3/8	250	6	8
Bilge, Limber Strake, and Through Butt Bolts. ....	9/16	5/8	5/8	11/16	11/16	3/4	3/4	13/16	13/16	7/8	7/8	15/16	1	300	7	9
Other Butt Bolts .....	9/16	5/8	5/8	5/8	11/16	11/16	11/16	3/4	3/4	3/4	3/4	13/16	7/8	350	8	10
In and out Bolts of Upper Deck Waterway, Shelf and Clamp, also Arms of Hanging and Lodging Knees, except in and out Throat Bolts of Hanging Knees, which must be larger, as above .....	11/16	3/4	3/4	3/4	13/16	13/16	13/16	7/8	7/8	7/8	15/16	1	1 1/8	400	8	11
Pintles of Rudder { The Braces of which must extend so as to receive not less than Two Bolts on the Planking on each side. ....	1 7/8	2	2	2 1/4	2 3/8	2 1/2	2 3/8	2 3/4	3	3	3 1/4	3 1/2	3 1/2	450	9	12
Hardwood Treennails .....	1	1	1	1 1/8	1 1/8	1 1/8	1 1/4	1 1/4	1 1/4	1 3/8	1 3/8	1 3/8	1 1/2	500	10	14
* NUMBER OF BOLTS IN SCARPHS OF KEEL:—	6	7	7	7	7	7	7	7	7	7	7	7	7	550	10	13
In Ships of 150 Tons and under .....	6	7	7	7	7	7	7	7	7	7	7	7	7	600	11	15
above 150 Tons and under 500 tons .....	7	7	7	7	7	7	7	7	7	7	7	7	7	650	11	16
500 Tons and above .....	8	8	8	8	8	8	8	8	8	8	8	8	8	700	12	17
														750	13	20
														800	14	22
														1100	15	24
														1350	17	26

12M July 1895

Moulding of Butlocks and Top Timbers to diminish gradually from size given at Floor Heads to that at Top Timber Heads. See Note, sec. 43.

This Depth of Waterway for Laying Surfaces against Timbers is required below the underside of the Plankings, to receive in and out through Bolts at alternate Timbers with alternate Plankings, and no Shelf.

N.B.—The size of Orlop Beams to be the same as the size of the Plankings.



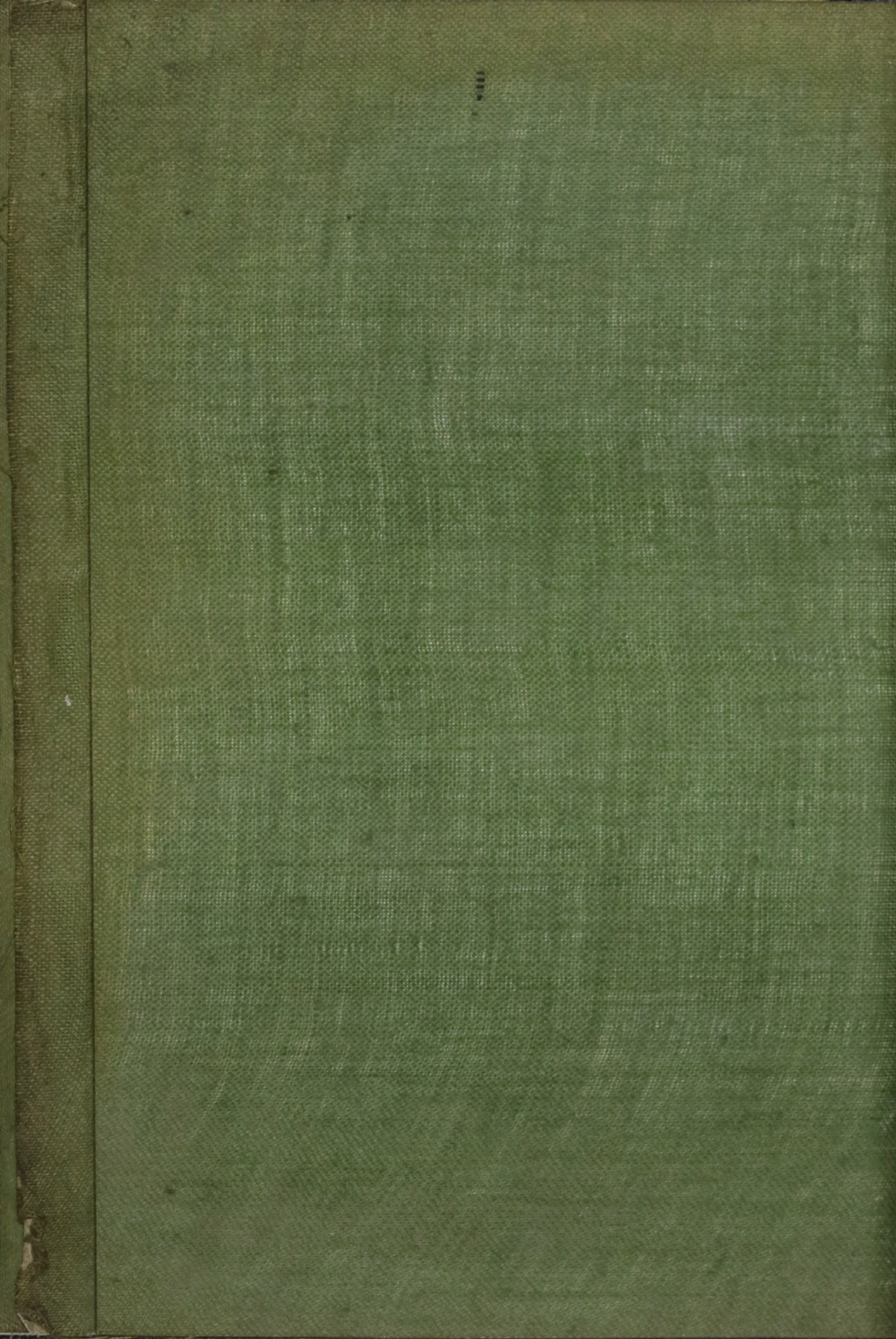




TABLE F.

MINIMUM DIMENSIONS OF IRON KNEES AND KNEE RIDERS FOR BRITISH NORTH AMERICAN BUILT SHIPS AND FIRE SHIPS.—Section 62.

TONNAGE .....Tons	150	200	250	300	350	400	450	500	550	600	650	700	750	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000
Number of Hanging Knees to Hold or Lower Deck Beams .....Pairs	3	4	6	8	9	Upwards, one Knee Rider to every Beam, or Knees and Riders as per Section 62																				
Number of Hanging Knees to Upper and Middle Deck Beams .....Pairs	4	6	7	8	9	10	11	12	13	14	15	16	17	18	Upwards, one to every Beam											
Breadth of Knees and Riders to Hold or Lower Deck Beams .....Inches	2½	2½	2¾	2¾	3	3	3¼	3¼	3½	3½	3¾	3¾	4	4	4¼	4¼	4½	4½	4¾	4¾	5	5	5¼	5¼	5½	5½
Breadth of Upper Deck Knees, where there are two Decks, and of Middle Deck Knees, where there are three Decks*.....Inches	2½	2½	2¾	2¾	3	3	3¼	3¼	3½	3½	3½	3¾	3¾	4	4	4¼	4¼	4½	4½	4½	4½	4¾	4¾	4¾	4¾	4¾
Thickness of Riders at the joints or butts of the Timbers .....Inches	1¼	1¼	1½	1½	1½	1½	1¾	1¾	2	2	2¼	2¼	2½	2½	2¾	2¾	3	3	3¼	3¼	3½	3½	3½	3½	3¾	3¾
Thickness of Knees to Lower Deck or Hold Beams and Knee Riders at the Angle of the Throat .....Inches	2½	2½	2¾	2¾	3	3	3¼	3¼	3½	3½	3¾	3¾	4	4	4¼	4¼	4½	4½	4¾	4¾	5	5	5¼	5¼	5½	5½
Thickness of Knees to Lower Deck or Hold Beams and Knee Riders at the Throat Bolts.....Inches	1¾	1¾	2	2	2¼	2¼	2½	2½	2¾	2¾	2¾	2¾	3	3	3	3	3¼	3¼	3½	3½	3½	3½	3½	3½	3¾	3¾
Thickness of Knees to Upper or Middle Deck at the Throat Bolts * .....Inches	1½	1½	1¾	1¾	2	2	2¼	2¼	2½	2½	2½	2½	2¾	2¾	2¾	2¾	3	3	3	3	3¼	3¼	3¼	3½	3½	3½
Thickness of Hanging Knees (not Riders) at the ends .....Inches	⅝	⅝	¾	¾	¾	¾	⅞	⅞	⅞	⅞	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Length of Beam Arms of Knees and Knee Riders for Lower Deck or Hold Beams† ...	ft. 2 in. 6	ft. 2 in. 6	ft. 2 in. 9	ft. 2 in. 9	ft. 3 in. 0	ft. 3 in. 0	ft. 3 in. 3	ft. 3 in. 3	ft. 3 in. 3	ft. 3 in. 6	ft. 3 in. 6	ft. 3 in. 6	ft. 3 in. 9	ft. 3 in. 9	ft. 3 in. 9	ft. 3 in. 9	ft. 4 in. 0	ft. 4 in. 0	ft. 4 in. 0	ft. 4 in. 0	ft. 4 in. 0	ft. 4 in. 0	ft. 4 in. 0	ft. 4 in. 0	ft. 4 in. 0	ft. 4 in. 0

NOTE.—The Bolts in all Iron Riders in Hold, to be not more than twenty-one inches apart on the average.

Standards upon the Beams of such Ships are not admitted as substitutes for Hanging Knees below them.

For sizes of Bolts, see Table D.

\* Breadth and thickness of Knees for Upper Deck, where there are Three Decks, may be one sixth less.

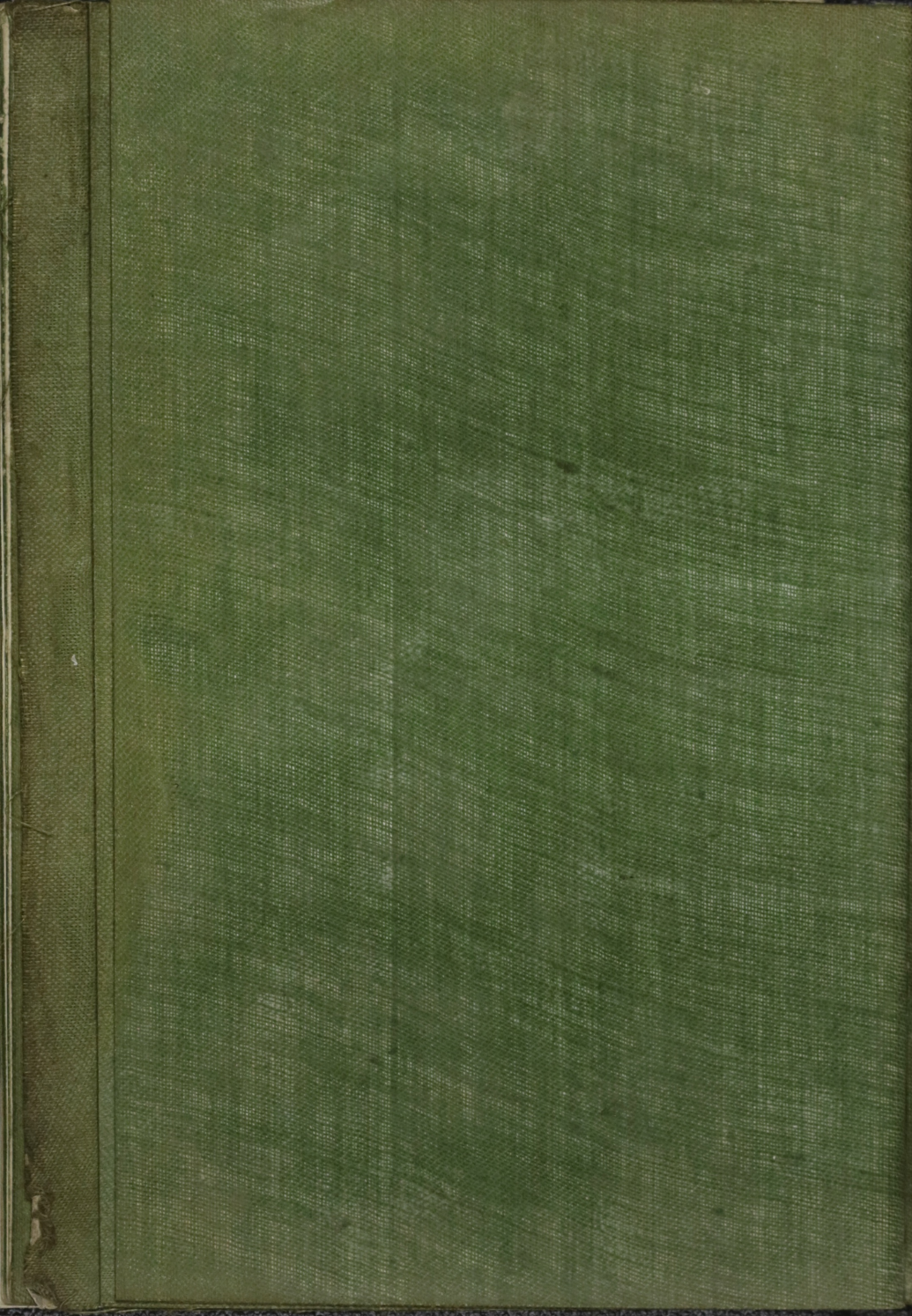
† Beam Arms of Upper and Middle Deck Knees, may be three inches shorter than those of the Lower Deck.

Side Arms of Hanging Knees not to be less in length, than one and a half the length of their Beam Arms.

Beam Arms of Knees and Knee Riders, which are 3ft. 6in. in length, to have not less than Four Bolts, and shorter than that length, to have not less than Three Bolts.

Side Arms of all Hanging Knees to have at least One Bolt more than in the Beam Arms.







# RULES FOR THE BUILDING OF SEA-GOING IRON SHIPS, OF ALL DESCRIPTIONS, WHETHER SAILING OR NAVIGATED BY STEAM.

Considering that Iron Ship-building is yet in its infancy, and that there are no well-understood general rules for building Iron Ships, the Committee have not deemed it desirable to frame a scheme compelling the adoption of a particular form or mode of construction, but that certain general requirements should be put forward, having for their basis thickness of plates and substance of frame, showing a *minimum in each particular* to entitle Ships to the Character A for a period of years, subject however to certain periodical surveys; and also to a continuation of such character, should their state and condition justify it on subsequent examination. For the purpose of attaining this object the following Rules and the accompanying Table of Dimensions (Table G) have been formed:—

1. The whole of the Iron to be of good malleable quality, the workmanship to be well-executed, and to be submitted to the closest inspection *before* coating or painting, and any brittle or inferior article to be rejected. It is not intended to prevent the coating of the plates *inside* in the way of the frame.

Quality of Iron  
and Workman-  
ship.

2. The keel, stem, stern and propeller posts to be scarphed or welded together at discretion, and to be in size according to Table G; if scarphed, the length of scarphs to be regulated in the proportion of eight times the thickness of the keel, and the stern posts and after end of keel, for screw propelled vessels, to be double the thickness of, and tapered fair into, the adjoining length of keel.

Keel, Stem, Stern  
and Propeller  
Posts.

N.B.—Where the keel and keelsons are made of several thicknesses of plates, the plates that form the keel, to be in thickness, taken together, the same as is required for a solid keel as per Table G; and the butts of the several plates of which the keel is formed, to be carefully shifted from each other, and from the butts of the garboard strakes.



Ribs of Frames,  
Spacing, &c.

3. The spacing and dimensions of the ribs or frames, to be as per Table G, and the ribs or frames in as great lengths as possible, and to be fitted close on to the upper edge of the keel, and in all cases to extend to the gunwale, and wherever butted, to have not less than four feet lengths of corresponding angle iron fitted back to back to cover and support the butts and receive the plating. And if welded together, the welds to be perfect, and the shifts not to be less than four feet.

Reversed Angle  
Iron.

4. The reversed angle irons to be in size as per Table G, and in vessels of 300 tons and upwards, to be rivetted on to *every other frame* up to the height of deck beam stringer, and in vessels above 1,000 tons, to be rivetted on *EVERY FRAME* to the height of the lower deck or hold beam stringer; the rivets for securing the angle iron to the frame, not to exceed six times their own diameter apart.

Floor Plates.

5. The floor plates to be in thickness as per Table G, the depth to be regulated according to the depth of the vessel, as described in foot note of Table G, and the reversed angle iron on the upper edges to run across each floor or frame to above the turn of bilge. A floor plate to be fitted and rivetted to every frame, and at the ends of the vessel the floor plates to be worked across the stem and stern posts, so as to support and unite the sides efficiently to each other.

Middle Line  
Keelson.

6. The middle line keelson, if of single plate, to be of the same thickness as the floor plates, and to be well fitted and rivetted to the same, and a reversed angle iron to be fitted on each side, both of the top and the bottom, extending all fore and aft, the lower angle irons to be secured to the reversed angle irons on the top of floors. If box keelsons be adopted, the plating to be of the thickness as per Table G, and in either case to be two-thirds of the depth of floor plates.

Bilge Keelsons.

7. The bilge keelsons to be fitted and secured in an efficient manner, extending all fore and aft, and placed according to the form of the bottom.

Plating.

8. All plates to be well fitted and secured to the ribs and each other, the butts to be closely fitted, and to be united by lining pieces or strips of not less than the same thickness as the plates, and of sufficient breadth for rivetting, as described hereafter. No butts of outside plating to be nearer each other than one space of frames, nor to be nearer to a scarp of keel than that distance.

The space between the outside plating and the frames, to have solid filling pieces closely fitted in one length, of the same breadth as the frames.

Clamps and Extra  
Stringers.

9. All vessels to have a clamp or ceiling plate fitted between each tier of beams all fore and aft inside the frames, and in small vessels where there

is but one tier of beams, then about two feet below them, the plate to be of the same dimensions as given for stringer plates upon beams in the Table G, and to be properly rivetted to the frame.

All vessels above 500 tons to have fitted between the bilge keelsons and the hold beams, at the upper part of the turn of bilge, strong angle irons, as stringers, extending all fore and aft, rivetted back to back to the reversed irons on the frames, the size of them not to be less than those used for the middle line keelson.

10. The depth of hold to be measured amidship from the top of the floor plates to the top of the upper deck beams in vessels with two decks, and to the top of the middle deck beams in vessels with three decks.

Depth of Hold,  
Space of Beams,  
and Length of  
Poops and Fore-  
castles.

The beams to be of the dimensions as per Table G, and to be made of "bulb," or any other approved iron plates, with reversed angle iron rivetted to the plates, the beams to be well and efficiently connected or rivetted to the corresponding frames at the sides of the vessel, with bracket ends or knee plates of thickness equal to the beams, and in length, as per Table G, also to the stringer plates, the beams of each deck to be over each other, and pillared where practicable.

Upper deck beams in vessels with one or two tiers of beams, and the upper (or spar deck) and middle deck beams in vessels with three tiers of beams, to be fastened to alternate frames.

Vessels of 12 feet and under 13 feet depth of hold, or where the gross register tonnage exceeds 200 tons, shall be required to have as many hold beams as may be practicable or convenient, fastened to, at least, every eighth frame.

Vessels of 13 feet depth and under 15 feet to have hold beams fastened to every fourth frame.

Vessels of 15 feet depth and under 18 feet, to have hold or lower deck beams fastened to every second and fourth frame, alternately.

Vessels of 18 feet depth and under 23 feet, to have hold or lower deck beams fastened to every alternate frame.

All vessels having two decks, and exceeding 23 feet in depth to the upper side of upper deck beams, and in vessels with three decks, viz., upper (or spar), middle, and lower deck, and exceeding 23 feet in depth to upper side of middle deck beams, such vessels to have orlop beams fastened to every sixth frame.

Where a deviation from the foregoing Rules as applying to beams takes place in way of engine room or hatchways, and where partial or entire bulkheads with horizontal shelves, and stringers between them, are substi-



wood, are to be scraped bright, and at that time, if it is found that no material diminution of thickness by corrosion or wear has occurred, the vessel, being in all respects in efficient condition, may then be continued for a further period, not exceeding one-half the whole number of years first assigned.

On the expiration of the terms assigned to ships classed A, they will be liable to lapse (like ships built of wood) into the diphthong *Æ* class, unless again specially re-surveyed, to determine their claims to be allowed a higher character.

18. One year will be added to the character of all ships of the A class built under a roof which shall project at each end beyond the length, and on each side beyond the breadth, a quantity equal to one-half the breadth of the vessel.

19. Vessels not surveyed while building, will be classed A from year to year only, but for a period not exceeding Six Years.

*No. 2, White Lion Court, Cornhill,  
London, 12th April, 1855.*



**TABLE G.**  
**IRON SHIPS.—TABLE OF MINIMUM DIMENSIONS OF FRAMES, PLATING, RIVETS, KEELS, KEELSONS, STEMS, STERN POSTS, FLOOR PLATES, BEAMS, BULKHEADS, STRINGERS, &c.**

OF FRAMES, RIBS, KEELS, KEELSONS, STEMS, STERN POSTS, FLOOR PLATES, BEAMS, BULKHEADS, STRINGERS, &c.																							
Gross Tonnage.	Keel, Stem, and Stern Post for all Grades.*	Distance of Frames or Ribs from Moulding edge to Moulding edge all fore and aft.			FRAMES or RIBS.  Dimensions of Angle Iron for all Grades.	Dimensions of Reversed Angle Iron on Frames and Bulkheads for all Grades.	THICKNESS OF PLATES. †									From Bilge to Sheer Strakes, thickness of Beams, ‡ Stringer Plates upon Beam Ends, Hooks, Crutches, § Floor Plates, and Middle line Keelsons.	BULKHEADS  Thickness of Plates throughout for all Grades	Dimensions of Angle Iron on Beam Stringers or Keelsons for all Grades.	RUDDER For all Grades.				
		Years.					Garboard Strakes.			From the Garboard to the upper part of Bilge, and the Sheer Strakes.			Years.						Years.			Diameter at the Head.	Diameter at the Heel.
		12	9	6			12	9	6	12	9	6	12	9	6				12	9	6		
	inches.	inches.	inches.	inches.	inches.	inches.	inches.	inches.	inches.	inches.	inches.	inches.	inches.	inches.	inches.	inches.	inches.	inches.	inches.				
100	5½×1½	16	18	16	18	16	18	16	18	16	18	16	18	16	18	16	18	16	18				
200	6×2	16	18	16	18	16	18	16	18	16	18	16	18	16	18	16	18	16	18				
400	6½×2½	16	18	16	18	16	18	16	18	16	18	16	18	16	18	16	18	16	18				
600	7×2¾	16	18	16	18	16	18	16	18	16	18	16	18	16	18	16	18	16	18				
800	7½×3	16	18	16	18	16	18	16	18	16	18	16	18	16	18	16	18	16	18				
1000	8½×3	16	18	16	18	16	18	16	18	16	18	16	18	16	18	16	18	16	18				
1200	9×3	16	18	16	18	16	18	16	18	16	18	16	18	16	18	16	18	16	18				
1500	10×3	16	18	16	18	16	18	16	18	16	18	16	18	16	18	16	18	16	18				
2000	12×3	16	18	16	18	16	18	16	18	16	18	16	18	16	18	16	18	16	18				
2500	12×3¼	16	18	16	18	16	18	16	18	16	18	16	18	16	18	16	18	16	18				
3000	12×3½	16	18	16	18	16	18	16	18	16	18	16	18	16	18	16	18	16	18				

Proportionate Diameter of Rivets	½ of an Inch.			¾ of an Inch.			7⁄8 of an Inch.				1 Inch.		
	4⁄16	5⁄16	6⁄16	7⁄16	8⁄16	9⁄16	10⁄16	11⁄16	12⁄16	13⁄16	14⁄16	15⁄16	16⁄16
To Thickness of Plates - -													

\* When Hollow Plate Keels are adopted, their thickness should not be less than one and a half that of the Garboard Strake.

† Plating not to be reduced in thickness at the ends of the Vessel from Keel to upper edge of Wales.

‡ All Beam Plates to be in depth one quarter of an inch for every foot in length of the Midship Beam; to have double Angle Iron upon upper edge, Siding & Moulding together of each to be not less than three-fourths the depth of Beam Plate.

§ Depth of Floor Plates not to be less than one inch for every foot of the Vessel's depth in Hold.

|| Stringer Plates upon Beams to be in width twice the Siding and Moulding of the Angle Iron on Beam Stringers, each arm of Knee Plates to be in length twice and half the depth of Beam.

The Rivets to be of the best quality and to be one quarter of an inch larger in diameter than the thickness of the Plates through which they pass in the Stem, Stern Post and Keel, and in the rest of the Plating as per Table, to be regularly and equally spaced and carefully punched opposite each other in the laps and lining pieces, or strips; to be countersunk all through the Outer Plating, and not to be nearer to the Butts or edges of the Plating, Lining Pieces to Butts, or any Angle Iron, than a space not less than their own diameter, and not to be further apart from centre to centre than three times their diameter, and to be spaced through the Frames and outside Plating a distance equal to eight times their diameter apart. When rivetted up, they are completely to fill the holes, and their points, or outer ends, are to be round or convex, and not to be below the surface of the plating through which they are rivetted. The Stem, Stern post, Keel, Garboard Strakes and Butts of outside plating to be double rivetted in all Vessels.



PARTS OF THE FRAME OF A VESSEL.	TWELVE YEARS.	TEN YEARS.	NINE YEARS.	EIGHT YEARS.
FLOORS .....	English } Oak African } Live } East-India Teak Morung Saul Greenheart Morra Iron Bark.	The same as in the preceding Class, and admit Mahogany of hard texture, Cuba Sabicu, Pencil Cedar, Adriatic, Spanish and French Oak, S. American and Australasian Hard Wood.	The same as in the preceding Class, and admit Red Cedar Other Continental White Oak Spanish Chesnut.	The same as in the preceding Class, and admit North American White Oak American Sweet Chestnut.
1st FUTTOCKS }	English } Oak African } Live } East-India Teak Morung Saul Greenheart Morra Iron Bark.	The same as in the preceding Class, and admit Mahogany of hard texture, Cuba Sabicu, Pencil Cedar, Adriatic, Spanish, and French Oak, S. American and Australasian Hard Wood.	The same as in the preceding Class, and admit Red Cedar Other Continental White Oak Spanish Chesnut.	The same as in the preceding Class, and admit North American White Oak American Sweet Chestnut.
2d FUTTOCKS ..	English } Oak African } Live } East-India Teak Morung Saul Greenheart Morra Iron Bark.	The same as in the preceding Class, and admit Mahogany of hard texture Cuba Sabicu Pencil Cedar.	The same as in the preceding Class, and admit Adriatic, Spanish, & French Oak S. American & Australasian Hard Wood Red Cedar.	The same as in the preceding Class.
3d FUTTOCKS .. and TOP TIMBERS }	English } Oak African } Live } East-India Teak Morung Saul Greenheart Morra Iron Bark.	The same as in the preceding Class, and admit Mahogany of hard texture Cuba Sabicu Pencil Cedar.	The same as in the preceding Class, and admit Adriatic, Spanish, & French Oak S. American & Australasian Hard Wood Red Cedar.	The same as in the preceding Class.
KEELSON ....	English } Oak African } Live } East-India Teak Morung Saul Greenheart Morra Iron Bark.	The same as in the preceding Class, and admit Mahogany of hard texture—Cuba Sabicu Pencil & Red Cedar Adriatic, Spanish, & French Oak S. American, and Australasian Hard Wood.	The same as in the preceding Class, and admit Other Continental White Oak Spanish Chesnut Pitch Pine.	The same as in the preceding Class, and admit North American White Oak American Sweet Chestnut Larch Hackmatack Tamarac Juniper.
STEM .....	English } Oak African } Live } East-India Teak Morung Saul.	The same as in the preceding Class, and admit Greenheart — Morra — Iron Bark Mahogany of hard texture Cuba Sabicu Pencil Cedar.	The same as in the preceding Class, and admit Adriatic, Spanish, & French Oak S. American & Australasian Hard Wood Red Cedar.	The same as in the preceding Class.
and STERN POST ..	English } Oak African } Live } East-India Teak Morung Saul.	The same as in the preceding Class, and admit Greenheart Morra Iron Bark Mahogany of hard texture Cuba Sabicu Pencil Cedar.	The same as in the preceding class, and admit Adriatic, Spanish, & French Oak S. American & Australasian Hard Wood Red Cedar.	The same as in the preceding Class.
TRANSOMS .... KNIGHTHEADS HAWSE TIMBERS .....	English } Oak African } Live } East-India Teak Morung Saul.	The same as in the preceding Class, and admit Greenheart Morra Iron Bark Mahogany of hard texture Cuba Sabicu Pencil Cedar.	The same as in the preceding class, and admit Adriatic, Spanish, & French Oak S. American & Australasian Hard Wood Red Cedar.	The same as in the preceding Class.
APRON and DEADWOOD ..	English, African, and Live Oak—East-India Teak—Morung Saul—Greenheart — Morra — Iron Bark—Mahogany of hard texture Cuba Sabicu Pencil Cedar.	The same as in the preceding Class, and admit Adriatic, Spanish, & French Oak S. American & Australasian Hard Wood Red Cedar.	The same as in the preceding Class.	The same as in the preceding Class, and admit Other Continental White Oak Spanish Chesnut Pitch Pine.
BEAMS .....	English, African, and Live Oak—East-India Teak—Morung Saul—Greenheart — Morra — Iron Bark—Mahogany of hard texture Cuba Sabicu Pencil Cedar.	The same as in the preceding class, and admit Adriatic, Spanish, & French Oak S. American & Australasian Hard Wood Red Cedar.	The same as in the preceding Class.	The same as in the preceding Class, and admit Other Continental White Oak Spanish Chesnut Pitch Pine.
and HOOKS .....	English, African, and Live Oak—East-India Teak—Morung Saul—Greenheart — Morra — Iron Bark—Mahogany of hard texture Cuba Sabicu Pencil Cedar.	The same as in the preceding class, and admit Adriatic, Spanish, & French Oak S. American & Australasian Hard Wood Red Cedar.	The same as in the preceding Class.	The same as in the preceding Class, and admit Other Continental White Oak Spanish Chesnut Pitch Pine.
KNEES .....	English, African, and Live Oak—East-India Teak—Morung Saul—Greenheart — Morra — Iron Bark—Mahogany of hard texture Cuba Sabicu Pencil Cedar.	The same as in the preceding class, and admit Adriatic, Spanish, & French Oak S. American & Australasian Hard Wood Red Cedar.	The same as in the preceding Class.	The same as in the preceding Class, and admit Other Continental White Oak Spanish Chesnut Pitch Pine.

\* This Table applies to the Deadwood so far as regards the material to be used from the height of two feet above the rabbet to the keel.  
† Live Oak and Red Cedar admitted alternately in timbers of the frame for 10 A.  
‡ If the First Futtocks run up above the Light Watermark, the use of Foreign White Oak is allowed for the 7 years' grade of timber.

MEM.—The word "English" includes Timber the growth of the United Kingdom.

Quality, to be used in the TIMBERING of SHIPS, as the same will be applicable for Ships to remain on the Character A.

SEVEN YEARS.	SIX YEARS.	FIVE YEARS.	FOUR YEARS.	PARTS OF THE FRAME OF A VESSEL.
The same as in the preceding Class, and admit Larch, Hackmatack, Tamarac, Juniper, Pitch Pine, Second-hand English or African Oak, or East-India Teak English Ash.	The same as in the preceding Class, and admit * Cowdie American Rock Elm.	The same as in the preceding Class, and admit Baltic & Amer. Red Pine Foreign Ash Europ. & Amer. Grey Elm Black Birch Spruce Fir * English Beech.	The same as in the preceding Class.	FLOORS.
The same as in the preceding Class, and admit Larch—Hackmatack Tamarac—Juniper Pitch Pine Second-hand English or African Oak, or East-India Teak.	The same as in the preceding Class, and admit Cowdie English Ash American Rock Elm.	The same as in the preceding Class, and admit Baltic & Amer. Red Pine Foreign Ash European and American Grey Elm * Black Birch Spruce Fir.	The same as in the preceding Class, and admit English Beech.	
The same as in the preceding Class, and admit other Continental White Oak Spanish Chesnut North Amer. White Oak American Sweet Chesnut Larch—Hackmatack Tamarac—Juniper Pitch Pine.	The same as in the preceding Class, and admit Second-hand English or African Oak, or East-India Teak Cowdie.	The same as in the preceding Class, and admit Baltic and American Red Pine English Ash American Rock Elm.	The same as in the preceding Class, and admit Foreign Ash American and European Grey Elm Black Birch Spruce Fir.	1st FUTTOCKS.
The same as in the preceding Class, and admit Other Continental White Oak, Spanish Chesnut, North Amer. White Oak Amer. Sweet Chesnut Larch—Hackmatack Tamarac—Juniper Pitch Pine Cowdie Baltic & Amer. Red Pine.	The same as in the preceding Class, and admit Second-hand English or African Oak, or East-India Teak American Rock Elm.	The same as in the preceding Class, and admit English Ash Foreign Ash.	The same as in the preceding Class, and admit Foreign Ash European and American Grey Elm Black Birch Spruce Fir Yellow Pine.	2d FUTTOCKS.
The same as in the preceding Class, and admit Cowdie	The same as in the preceding Class, and admit Second-hand English or African Oak, or East-India Teak American Rock Elm.	The same as in the preceding Class, and admit English Ash Foreign Ash.	The same as in the preceding Class, and admit European and American Grey Elm Black Birch Spruce Fir Yellow Pine.	3d FUTTOCKS and TOP TIMBERS.
The same as in the preceding Class, and admit Other Continental White Oak—Spanish Chesnut N. Amer. White Oak Amer. Sweet Chesnut Larch—Hackmatack Tamarac—Juniper.	The same as in the preceding Class, and admit Pitch Pine Cowdie.	The same as in the preceding Class, and admit Second-hand English or African Oak, or East-India Teak Baltic and American Red Pine American Rock Elm.	The same as in the preceding Class, and admit English Ash—Foreign Ash European and American Grey Elm Black Birch Spruce Fir Yellow Pine.	KEELSON.
The same as in the preceding Class, and admit Other Continental White Oak, Spanish Chesnut, North Amer. White Oak American Sweet Chesnut Larch—Hackmatack Tamarac Juniper.	The same as in the preceding Class, and admit Second-hand English or African Oak, or East-India Teak Pitch Pine Cowdie.	The same as in the preceding Class, and admit Baltic and American Red Pine American Rock Elm.	The same as in the preceding Class, and admit English Ash Foreign Ash European and American Grey Elm Black Birch Spruce Fir Yellow Pine.	STEM and STERN POST.
The same as in the preceding Class, and admit North Amer. White Oak Amer. Sweet Chesnut Larch—Hackmatack Tamarac—Juniper	The same as in the preceding Class, and admit Second-hand English or African Oak, or East-India Teak.	The same as in the preceding Class, and admit English Ash Foreign Ash American Rock Elm European and American Grey Elm.	The same as in the preceding Class, and admit Black Birch Spruce Fir Yellow Pine.	TRANSOMS KNIGHTHEADS HAWSE TIMBERS APRON DEADWOOD.
The same as in the preceding Class, and admit North Amer. White Oak Amer. Sweet Chesnut Larch—Hackmatack Tamarac—Juniper	The same as in the preceding Class, and admit Second-hand English or African Oak, or East-India Teak.	The same as in the preceding Class, and admit English Ash Foreign Ash American Rock Elm European and American Grey Elm.	The same as in the preceding Class, and admit Black Birch Spruce Fir Yellow Pine.	BEAMS and HOOKS
The same as in the preceding Class, and admit North Amer. White Oak Amer. Sweet Chesnut Larch—Hackmatack Tamarac—Juniper Cowdie Baltic & Amer Red Pine	The same as in the preceding Class, and admit Second-hand English or African Oak, or East-India Teak.	The same as in the preceding Class, and admit English Ash Foreign Ash American Rock Elm European and American Grey Elm.	The same as in the preceding Class, and admit Black Birch Spruce Fir Yellow Pine.	KNEES.

\* Black Birch, Beech, American Rock Elm, and Cowdie allowed for Floors in Midships, to an extent not exceeding one-half the entire length of the keel in ships of the Seven Years' Grade.

\*\* Black Birch allowed for First Futtocks and midships, to the same extent in Ships of the Six Years' Grade.

White Cedar allowed for Third Futtocks and Top timbers in ships of the Seven Years' Grade.

For relaxation in favour of Steam Vessels, *vide* Rules, page 27.



No. 2.—A TABLE exhibiting the different Descriptions of TIMBER, of good  
applicable to the several Terms of Years appointed

PARTS OF THE OUTSIDE OF A VESSEL.	TWELVE YEARS.	TEN YEARS.	NINE YEARS.	EIGHT YEARS.
KEEL ..... to the 1st FUTTOCK HEADS.....	English, African, and Live Oak, East-India Teak, Morung Saul, Greenheart, Morra, Iron Bark, Mahogany of hard texture, Cuba Sabicu, Pencil Cedar, Adriatic, Spanish, and French Oak, S. Ameri- can and Australasian Hard Wood, Red Cedar, other Continental White Oak, Spanish Chesnut, North Ame- rican White Oak, Ameri- can Sweet Chesnut, Larch, Hackmatack, Tamarac, Juniper, Pitch Pine, §American Rock Elm, §European and American Grey Elm, §English Beech.	The same as in the pre- ceding Class, and admit Cowdie English Ash Foreign Ash Black Birch.	The same as in the pre- ceding Class, and admit Baltic and American Red Pine.	The same as in the pre- ceding Class.
1st FUTTOCK HEADS ..... to LIGHT WATER MARK .....	English, African, and Live Oak, East-India Teak, Morung Saul, Greenheart, Morra, Iron Bark, Mahogany of hard texture, +Cuba Sabicu, Pencil Cedar, Adriatic, Spanish, and French Oak, S. Ameri- can and Australasian Hard Wood, Red Cedar, other Continental White Oak, Spanish Chesnut, Pitch Pine.	The same as in the pre- ceding Class, and admit North American White Oak American Sweet Chesnut Larch Hackmatack Tamarac Juniper.	The same as in the pre- ceding Class, and admit Cowdie Baltic and American Red Pine.	The same as in the pre- ceding Class, and admit American Rock Elm European and American Grey Elm English Beech.
LIGHT WATER MARK ..... to WALES .....	English } Oak African } Live } East-India Teak Morung Saul Greenheart Morra Iron Bark Red Cedar.	The same as in the pre- ceding Class, and admit Mahogany of hard tex- ture—Cuba Sabicu Pencil Cedar Adriatic, Spanish, and French Oak S. American and Austr- alasian Hard Wood.	The same as in the pre- ceding Class, and admit Other Continental White Oak Spanish Chesnut Pitch Pine.	The same as in the pre- ceding Class, and admit N. American White Oak Amer. Sweet Chesnut Larch—Hackmatack Tamarac Juniper Cowdie Baltic & Amer. Red Pine
WALES ..... and BLACKSTRAKES	English } Oak African } Live } East-India Teak Morung Saul Greenheart Morra Iron Bark.	The same as in the pre- ceding Class, and admit Mahogany of hard tex- ture Cuba Sabicu Pencil Cedar Red Cedar.	The same as in the pre- ceding Class, and admit Adriatic, Spanish, and French Oak S. American and Austr- alasian Hard Wood.	The same as in the pre- ceding Class, and admit Other Continental White Oak Spanish Chesnut Pitch Pine.
TOPSIDES..... SHEERSTRAKES and PLANKSHEER..	English } Oak African } Live } East-India Teak Morung Saul Greenheart Morra Iron Bark.	The same as in the pre- ceding Class, and admit Mahogany of hard tex- ture Cuba Sabicu Pencil Cedar Red Cedar.	The same as in the pre- ceding Class, and admit Adriatic, Spanish, and French Oak S. American and Austr- alasian Hard Wood Pitch Pine.	The same as in the pre- ceding Class, and admit Other Continental White Oak Spanish Chesnut.
UPPER DECK WATERWAYS	English } Oak African } Live } East-India Teak Morung Saul Greenheart Morra—Iron Bark Mahogany of hard tex- ture Cuba Sabicu Pencil Cedar Red Cedar.	The same as in the pre- ceding Class, and admit Adriatic, Spanish, and French Oak S. Amer. and Austr- alasian Hard Wood Larch—Hackmatack Tamarac Juniper Pitch Pine Cowdie Baltic & Amer. Red Pine.	The same as in the pre- ceding Class.	The same as in the pre- ceding Class, and admit Other Continental White Oak Spanish Chesnut.

§ The use of Elm and Beech, in Ships above the EIGHT YEARS' grade, to be restricted to a height from the lower part of the main Keel, of one third of the internal depth of the Ship measured, in midships, from the top of the Limber Strake to the top of the Upper Deck Beams.

Quality, to be used in the OUTSIDE PLANKING of SHIPS, as the same will be for Ships to remain on the Character A.

SEVEN YEARS.	SIX YEARS.	FIVE YEARS.	FOUR YEARS.	PARTS OF THE OUTSIDE OF A VESSEL.
The same as in the preceding Class.	The same as in the preceding Class, and admit Spruce Fir Yellow Pine.	The same as in the preceding Class.	The same as in the preceding Class.	<div> <div>KEEL</div> <div>to the</div> <div>1st FUTTOCK HEADS.</div> </div>
The same as in the preceding Class, and admit English Ash Foreign Ash Black Birch.	The same as in the preceding Class.	The same as in the preceding Class, and admit Spruce Fir Yellow Pine.	The same as in the preceding Class.	
The same as in the preceding Class.	The same as in the preceding Class, and admit American Rock Elm.	The same as in the preceding Class, and admit European and American Grey Elm Yellow Pine.	The same as in the preceding Class, and admit English Ash Foreign Ash Black Birch Spruce Fir English Beech.	
The same as in the preceding Class, and admit North Amer. White Oak American Sweet Chesnut Larch—Hackmatack Tamarac Juniper Cowdie Baltic & Amer. Red Pine.	The same as in the preceding Class.	The same as in the preceding Class, and admit American Rock Elm Yellow Pine.	The same as in the preceding Class, and admit European and American Grey Elm Black Birch Spruce Fir.	<div> <div>1st FUTTOCK HEADS</div> <div>to</div> <div>LIGHT WATER MARK.</div> </div>
The same as in the preceding Class, and admit North Amer. White Oak American Sweet Chesnut Larch—Hackmatack Tamarac Juniper Cowdie Baltic & Amer. Red Pine.	The same as in the preceding Class.	The same as in the preceding Class, and admit American Rock Elm.	The same as in the preceding Class, and admit European and American Grey Elm Black Birch Spruce Fir Yellow Pine.	<div> <div>LIGHT WATER MARK</div> <div>to</div> <div>WALES.</div> </div>
The same as in the preceding Class, and admit North American White Oak American Sweet Chesnut.	The same as in the preceding Class.	The same as in the preceding Class, and admit Second-hand English or African Oak East-India Teak American Rock Elm †† Yellow Pine.	The same as in the preceding Class, and admit European and American Grey Elm Black Birch Spruce Fir.	<div> <div>WALES</div> <div>and</div> <div>BLACKSTRAKES</div> </div>
				<div> <div>TOPSIDES,</div> <div>SHEERSTRAKES</div> <div>and</div> <div>PLANKSHEER.</div> </div>
				<div> <div>UPPER DECK</div> <div>WATERWAYS.</div> </div>

†† Yellow Pine allowed for Waterways of Upper Deck in Ships of the SEVEN YEARS' grade, if properly fastened, as prescribed in Table B, and provided the Beams are well secured, independently of the Waterways.

MEM.—The word "English," includes Timber the growth of the United Kingdom.  
For relaxation in favour of Steam Vessels, *vide* Rules, page 27.



No. 3.—A TABLE exhibiting the different Descriptions of TIMBER, of good  
applicable to the several Terms of Year

INSIDE PLANK.	TWELVE YEARS.	TEN YEARS.	NINE YEARS.	EIGHT YEARS.
LIMBER STRAKES and BILDGE STRAKES	English } Oak African } Live } East-India Teak Morung Saul Greenheart Morra Iron Bark Mahogany of hard texture Cuba Sabicu Pencil Cedar Adriatic, Spanish, and French Oak S. American and Austra- lasian Hard Wood Red Cedar.	The same as in the pre- ceding Class, and admit Other Continental White Oak Spanish Chesnut.	The same as in the pre- ceding Class, and admit North American White Oak American Sweet Chesnut Pitch Pine.	The same as in the pre- ceding Class.
CEILING, LOWER HOLD, and BETWEEN DECKS.	English } Oak African } Live } East-India Teak Morung Saul Greenheart Morra Iron Bark Mahogany of hard texture Cuba Sabicu Pencil Cedar Adriatic, Spanish, and French Oak S. American and Austra- lasian Hard Wood Red Cedar.	The same as in the pre- ceding Class, and admit Other Continental White Oak Spanish Chesnut.	The same as in the pre- ceding Class, and admit North American White Oak American Sweet Chesnut Pitch Pine.	The same as in the pre- ceding Class, and admit Larch Hackmatack Tamarac Juniper Cowdie Baltic and American Red Pine.
SHELF PIECES and CLAMPS.	English } Oak African } Live } East-India Teak Morung Saul Greenheart Morra Iron Bark Mahogany of hard texture Cuba Sabicu Pencil Cedar Adriatic, Spanish, and French Oak S. American and Austra- lasian Hard Wood Red Cedar.	The same as in the pre- ceding Class, and admit Other Continental White Oak Spanish Chesnut.	The same as in the pre- ceding Class, and admit North American White Oak American Sweet Chesnut Pitch Pine.	The same as in the pre- ceding Class, and admit Larch Hackmatack Tamarac Juniper Cowdie.

Quality, to be used in the **INSIDE PLANKING** of SHIPS, as the same will be for Ships to remain on the Character A.

SEVEN YEARS.	SIX YEARS.	FIVE YEARS.	FOUR YEARS.	INSIDE PLANK.
The same as in the preceding Class, and admit Larch Hackmatack Tamarac Juniper Cowdie Baltic and American Red Pine American Rock Elm.	The same as in the preceding Class.	The same as in the preceding Class, and admit Second hand English or African Oak East-India Teak English Ash Foreign Ash European and American Grey Elm Black Birch Spruce Fir English Beech Yellow Pine.	The same as in the preceding Class.	<div> LIMBER STRAKES and BILDGE STRAKES. </div>
The same as in the preceding Class.	The same as in the preceding Class, and admit American Rock Elm.	The same as in the preceding Class, and admit Second hand English or African Oak East-India Teak English Ash Foreign Ash European and American Grey Elm Black Birch Spruce Fir English Beech Yellow Pine.	The same as in the preceding Class.	<div> CEILING, LOWER HOLD, and BETWEEN DECKS. </div>
The same as in the preceding Class, and admit Baltic and American Red Pine.	The same as in the preceding Class, and admit American Rock Elm.	The same as in the preceding Class, and admit Yellow Pine.	The same as in the preceding Class, and admit Second hand English or African Oak East-India Teak English Ash Foreign Ash European and American Grey Elm Black Birch Spruce Fir English Beech.	<div> SHELF PIECES and CLAMPS. </div>

MEM.—The word "English" includes Timber the growth of the United Kingdom.  
For relaxation in favour of Steam Vessels, *vide* Rules, page 27.



## No. 4.

## FORM OF THE REPORT OF ORIGINAL SURVEY.

No. — Survey held at — Date — 185 — on the — Master —  
 Tonnage } Old — Built at — When built — Launched —  
           } New —  
 By whom built — Owners — Port belonging to — Destined Voyage —  
 If Surveyed while building, Afloat, or in Dry Dock —  
 Length aloft | Feet. | Inches. | Extreme Breadth | Feet. | Inches. | Depth of Hold | Feet. | Inches.  
                   | | | outside | | |

## SCANTLINGS OF TIMBER.

## THICKNESS OF PLANK.

	Inch.	Inch. Midd.	Inch. Ends	OUTSIDE.	Inch.	INSIDE.	Inch.
Timber and Space .....				Garboard		Lumber Strakes .....	
Floors.....sided	Moulded			Strakes.....		Bilge Planks .....	
1st Foothooks .....				Garboard to		Ceiling in Flat.....	
2d Ditto .....				Bilge .....		Ditto Bilge to Clamp	
3d Ditto .....				Bilge Planks		Hold Beam Clamps..	
Top Timbers .....				Bilge to Wales		Deck Beam Ditto ...	
Deck Beams No. ... { Average				Wales .....		Ceiling 'twixt Decks	
Deck Beams, length amid-				Topsides .....		Hold Beam Shelves ..	
ships .....				Sheerstrakes		Deck Beam ditto.....	
Hold Beams No. ... { Average				Plankshears			
Hold Beams, length amid-				Waterways—			
ships .....				Upper Deck			
Keel .....				Lower Deck			
Scarphs of Ditto.....				Upper Deck			
Kelsons .....							
Scarphs of Ditto .....							

## SIZE OF BOLTS IN FASTENINGS, DISTINGUISHING WHETHER COPPER OR IRON; ALSO OF TREENAILS.

	Copper Inches.	Iron Inches.		Copper Inches.	Iron Inches.
Heel-Knee and Deadwood abaft ...			Butt End Bolts .....		
Scarphs of Keel ..... No. ....			Pintles of the Rudder.....		
Kelson Bolts through Keel at each			Hold Beam Bolts { Waterway		
Floor .....			in { Knees		
Bolts through Heels of Timbers			Deck Beam Bolts { Waterway		
against Deadwood .....			in { Knees		
Transoms and throats of Hooks.....			in { Shelf or Clamp		
Arms of Hooks .....			Nails or Bolts in Flat of Deck.....		
Bolts through Bilge and Lumber			Treenails.....Inches.....		
Strakes, or Thickstuff over Double					
Floors .....					

TIMBERING.—The Space between the Floor Timbers and Lower Foothooks is — Inches.  
 The Space between the Top Timbers is — Inches.

The Floors consist of — The First Foothooks of — Timber.  
 The Second Foothooks of — The Third Foothooks and Top Timbers of —  
 The Shifts of the first and second Foothooks are not less than —  
 [N.B. When less than prescribed by the Rule, state how many.]

The rest of the Shifts of the Frame are —  
 The Frame is — squared from the first Foothook Heads upwards, and — free from  
 sap, and from thence downwards the Frame is —

The alternate Frames are — bolted together to the Gunwale.  
 [N.B. If not, state how bolted.]

The Butts of the Timbers are — close together; their thickness not less than — o  
 the entire moulding at that place.

The frame is — choaked with — Butt at each end of the chock. The Main Keel  
 is —

The Main Kelson is ——— and ——— free from all defects. The False Kelson is ———  
 The Stem and Stern Post consist of ——— The Transoms, Aprons, Knight Heads,  
 and Hawse Timbers of ——— Deadwood, of ——— and are ——— free from all defects.  
 The Deck and Hold Beams consist of ——— The Breasthooks of ——— The Knees of ———  
 PLANKING OUTSIDE.—From the Keel to the Height defined in Note to Table A, or to the First  
 Foothook Heads the Plank is ———

From the above-named height to the Light Water Mark ———

From the Light Water Mark to the Wales ———

The Wales and Blackstrakes are ——— The Topsides ———

The Sheerstrakes and Planksheers ——— The Waterways { Upper Deck ———  
 Lower Deck ———

The Decks ——— State of ———

The Shifts of the Planking are not less than ——— feet ——— inches. [N.B.—If less than pre-  
 scribed by the Rule, state whether general or partial, and if partial, in what part of the Ship.]

The Planking is wrought ——— between, and without step-butting.

PLANKING INSIDE.—The Limber-strakes and Bilge-strakes are ———

The Ceiling, Lower Hold, and between Decks ——— Shelf Pieces and Clamps ———

FASTENINGS.—To Hold Beams ———

Deck Beams ———

Number of Breasthooks ——— Pointers ——— Crutches ———

Butts End Bolts are of ——— in the Bottom, and ——— Bolt in each Butt End through  
 and clenched.

Bilge and Limber Strakes ——— bolted through and clenched. Treenails of ——— How  
 made ———

Thickstuff over Double Floors ——— bolted through and clenched. General Quality  
 of Workmanship ———

We certify that the above is a correct description of the several particulars therein given

Builder's Signature ———

Surveyor's Signature ———

Her Masts, Yards, &c. are in ——— condition, and sufficient in size and length.

She has SAILS.

CABLES, &c.

ANCHORS,

No.		Fathoms.	Inches.	and their Weights	No.	Weight.
	Fore Sails,	Chain .....		Bower .....		
	Fore Top Sails,	Hempen Stream Cable		Stream .....		
	Fore Topmast Stay Sails,	Hawser .....		Kedge.....		
	Main Sails,	Towlines.....				
	Main Top Sails,	Warp .....				
	and	All of ..... quality.				

Her Standing and Running Rigging ——— sufficient in size and ——— in quality.

She has ——— Long Boat and ——— The present state of the Windlass is ———

Capstan ——— Rudder ——— Pumps ———

### General Remarks and Statement and Date of Repairs, if any.

Dates of Surveys { 1st. When the Frame is completed ———  
 held while building, { 2nd. When the Beams are put in, &c. ———  
 as per Section 35. { 3rd. When completed, and before the plank be painted or payed ———

Present condition of Caulking of Bottom, ——— Deck, ——— and Waterways ———  
 If Sheathed, Doubled, Felted, or Coppered ——— When last done ———

I am of opinion this Vessel should be classed ———

The Amount of the Fee ..... £ : : is received by me,

Special ..... £ : :

Certificate ..... £ : :

Committee's Minute ——— 185—

Character assigned ———



## No. 5.

## IRON SHIPS.

No — Survey held at — Date — 185 — on the — Master —  
 Tonnage—Gross — Engine Room — Register — Built at —  
 When built — By whom built — Owners — Port belonging to —  
 Destined Voyage — If Surveyed Afloat or in Dry Dock —

Length afloat ..... Feet. Inches. Horse. No.  
 Extreme Breadth .....  
 Depth from Beam to top of Floor..... Power of Engines .....

	Feet.	Inches.	Sketch, when necessary.		Inches. 8ths.	Sketch, when necessary.
Distance between Floors amidships .....				Stem, if bar iron, moulding and thickness		
"    "    "    forward and aft				"    if plate iron, breadth and thickness		
"    "    Ribbs amidships.....				Stern-post, if bar iron, moulding and		
"    "    "    forward and aft..				thickness .....		
Floors, Size of Angle Iron, and No. at	In.	In.	8ths.	"    if plate iron, breadth and		
bottom of Floor plate .....				thickness .....		
"    depth and thickness of Plate at				Keel, if bar iron, depth and thickness.....		
mid line .....				"    if plate iron, breadth and thickness		
Do. at turn of bilge .....				Description of Iron.		
"    Size of Reversed Angle Iron, and				Garboard Plates, thick-		
No. at top of Floor Plate...				ness.....		
Ribbs, Size of Angle Iron, single or double				"    to bilge " .....		
"    "    Reversed Iron, if to every				Bilge " .....		
frame or every frame...				"    to Wales " .....		
Beams, Deck (No. ) double or single				Wales " .....		
Angle Iron .....				Topsides " .....		
"    "    depth and thickness of				Sheer-strakes " .....		
Plate amidships .....						
"    "    double or single Angle				Planksheers.....		
Iron, on lower edge .....				Gunwale Plate or Strin-		
"    "    average space between.....				ger.....		
"    "    if wood (No. ) sided and				Waterway.....		
moulded.....				Deck.....		
"    Hold, (No. ) double or single				Ceiling in flat .....		
Angle Iron .....				Bilge Planks inside....		
"    "    depth and thickness of Plate				Ceiling from Bilge to		
amidships .....				Clamps.....		
"    "    double or single Angle				Hold Beam Clamps ..		
Iron, on lower edge.....				"    Shelf .....		
"    "    average space between.....				"    Stringers...		
"    "    if wood (No. ) sided and				Ceiling between Decks		
moulded.....				Stringers " .....		
"    Paddle, wood, sided and moulded				Deck Beam Clamps ...		
or if Iron, size of Plate				"    Shelf .....		
Engine				Stringers in Hold .....		
Keelson, wood, sided and moulded, iron				Deck, Lower .....		
size of plate, if Box, give						
sketch and dimensions.....						
"    Side or Bilge .....						
"    Number .....						

Transoms, material ——— or, if none, in what manner compensated for.

Knight-heads „ } are they free from defects?

Hawse Timbers „

The Ribs extend in one length from ——— to ——— rivetted through plates with — in. rivets, about ——— apart.

The reverse angle irons on the floors extend in one length across the middle line from — to —

„ „ on the ribs „ „ „ from ——— to ———

Keelson, if wood, length of scarph ——— if iron, how are the various lengths connected?

Plates, Garboard, double or single rivetted to keel, with rivets — ins. diameter, averaging — in. from centre to centre of rivet.

„ edges from Garboards to turn of bilge, worked carvel with a lining piece — in. thick, or clencher, double or single rivetted; rivets — in. diameter, averaging — ins. from centre to centre of rivets.

„ butts from Garboards to turn of bilge, worked carvel with a lining piece — thick, double or single rivetted; rivets — in. diameter, averaging — ins. from centre to centre of rivets. Do the lining pieces lap over and rivet through the lands of the strake below?

„ edges from bilge to wales, worked carvel with a lining piece — thick, or clencher, double or single rivetted; rivets — in. diameter, averaging — ins. from centre to centre of rivets.

„ butts from bilge to wales, worked carvel with a lining piece — thick, double or single rivetted; rivets — in. diameter, averaging — in. from centre to centre of rivets.

Do the lining pieces lap over and rivet through the lands of the strake below?

„ edges to wales and to planksheers, worked carvel with a lining piece — thick, or clencher, double or single rivetted; rivets — in. diameter, averaging — ins. from centre to centre of rivets.

Planksheer, how secured to the plating of the sides

Waterway „ „ planksheer and to the beams { Explain by a sketch, }  
if necessary.

Side trussing ——— breadth and thickness of plates ——— how secured ———

Deck trussing ——— „ „ „ „ „ „

Deck Beams, how secured to the side ———

Hold „ „ „ ———

Paddle „ „ „ ———

No. of breasthooks ——— crutches ——— how are pointers compensated?

What description of iron is used for the angle iron and bar iron in the vessel?

————— Builder's Signature.

WORKMANSHIP.—Are the lands or laps of the clench work in all cases sufficiently wide to take the rivets and support the strain on them?

Do the edges of the carvel work and of the butts lay close together throughout their length without requiring any making good of deficiencies?



Do the fillings between the ribs and plates fill in all solid with sliver pieces, or are they in short lengths?

Do the holes for rivetting plate to lining piece, or plate to plate, &c., answer well to each other? ——— and are the rivet holes well and sufficiently counter sunk in the outer plate?

Are there any rivets which either break into or have been put through the seams or butts of the plating?

Was the plating caulked internally in the wake of the frames or ribs?

Her Masts, Yards, &c., are in ——— condition, and sufficient in size and length.

She has SAILS.		CABLES, &c.		ANCHORS, and their weights.	
No.	Fathom	Inches.	No.		
Fore Sails,		Chain .....		Bower,	
Fore Top Sails,		Hempen Stream Cable		Stream,	
Fore Topmast Stay Sails,		Hawser .....		Kedge,	
Main Sails,		Towlines.....			
Main Top Sails		Warp .....			
and		All of ——— quality.			

Her Standing and Running Rigging ——— sufficient in size, and ——— in quality

She has ——— Long Boat and ———

The present state of the Windlass is ——— Capstan ——— and Rudder ———

Pumps ———

#### GENERAL REMARKS.

*Statement and date of repairs; extent of corrosion (if any) both internally and externally; and condition of rivets.*

In what manner are the surfaces preserved from oxidation?

I am of opinion this vessel should be classed ———

The amount of the Fee .. £ : : is received by me,

Special ..... £ : :

Certificate (if required) ..... £ : :

Committee's Minute ——— 185—

(Surveyor's Signature.)

Character assigned ———

FORM OF REPORT OF ANNUAL SURVEY.

No. — Survey held at — Date — 18 — on the —  
 Master — Tonnage — Built at — When built — By whom  
 built — Owners — Port belonging to — Destined  
 Voyage — If Surveyed Afloat or in Dry Dock —

Last Survey, No. — Port of — Classed —

The present condition of the

Decks .....	Plank (Bottom) & Counter.	Caulking of Bottom, Deck,
Waterways .....	Treenails.....	and Waterways .....
Comings .....	Breasthooks and Stemson..	Windlass and Capstan .....
Upper Deck Beams and	Transoms, Pointers, and	Pumps.....
Fastenings .....	Crutches.....	Boats .....
Lower Deck Beams and	Timbers of the Frame .....	Masts, Yards, &c. ....
Fastenings .....	Keelsons.....	Sails.....
Planksheers .....	Clamps and Shelves.....	Anchors, No. of.....
Sheerstrakes .....	Ceiling.....	Cables.....
Topsides .....	Rudder .....	Hawsers and Warps .....
Wales .....	Copper, when put on .....	Standing & Running Rigging

General Observations and Opinion,

Committee's Minute — 18 —  
 Character assigned —

Certificate (if required)

No. 7.

FORM OF CERTIFICATE OF CHARACTER.

*Lloyd's Register of British and Foreign Shipping.*

ESTABLISHED 1834.

No. —



London,

18

No. 2, White Lion Court, Cornhill.

**These are to Certify,** That the — of —

— Master, — Tons, bound to —, has been  
 Surveyed at — by the Surveyors to this Society, and reported to be, on the

and that she has been **CLASSED** and entered in the **REGISTER BOOK** of this  
 Society with the character —

Charge s.

Witness my hand,

Chairman.

, Secretary.



## FORM OF CERTIFICATE FOR VESSELS NAVIGATED BY STEAM.

LLOYD'S REGISTER OF BRITISH AND FOREIGN SHIPPING.

*Certificate for Vessels navigated by Steam.*

Day of \_\_\_\_\_, 18\_\_\_\_

\_\_\_\_\_ do certify that the whole of the Boilers and machinery of the Steam Vessel \_\_\_\_\_ belonging to \_\_\_\_\_, whereof \_\_\_\_\_ is Master, \_\_\_\_\_ Tons, have been carefully inspected and examined by \_\_\_\_\_ at \_\_\_\_\_, and that \_\_\_\_\_ find the same to be at this time in good order and safe working condition.

Witness \_\_\_\_\_

*Manufacturing Engineer.*

The following is a true Account of the Particulars of the machinery of the Steam Vessel \_\_\_\_\_ above named:

## ENGINES.

Number .....  
 Diameter of Cylinder .....  
 Length of Stroke .....  
 No. per Minute .....  
 Estimated Power .....  
 Diameter of Paddle-wheels ....  
 Length of Paddles .....  
 Breadth of Paddles .....  
 No. of Paddles .....  
 On what motion .....  
 No. of revolutions per minute ..  
 Size of the holding-down bolts ..  
 Condition of ditto .....  
 Maker of the Engines .....  
 Age of the Engines .....  
 When they were last taken out  
 Present condition of the Engines  
 Can injection water be taken  
 from the Bilge in the event of  
 a serious Leak .....

## FUEL.

Where stowed .....  
 If in contact with boiler .....  
 If not, what space between Coal  
 Boxes and Boiler .....  
 For what quantity room is pro-  
 vided .....  
 If liable to get wetted.....

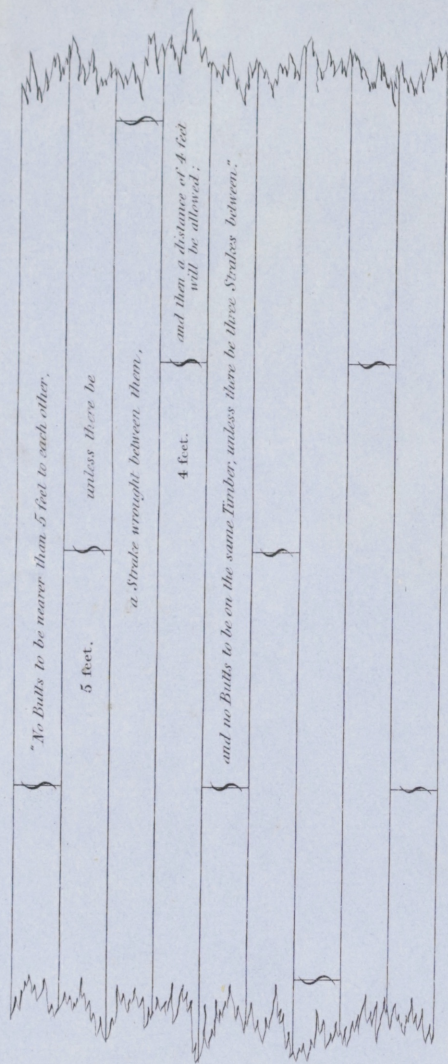
## BOILERS.

Whether iron or copper.....  
 Working pressure .....  
 If it can be increased without  
 going into the Boiler.....  
 What are the means of changing  
 the water while the Boilers are  
 at work .....  
 Maker of the Boilers.....  
 Age of the Boilers.....  
 When they were last taken out  
 Present condition .....  
 Number of feed pumps .....  
 How attached.....  
 What clear space upon the top-  
 side of the boiler from wood-  
 work .....  
 Do. at the end from ditto.....  
 Do. round the chimney from do

## PUMPS.

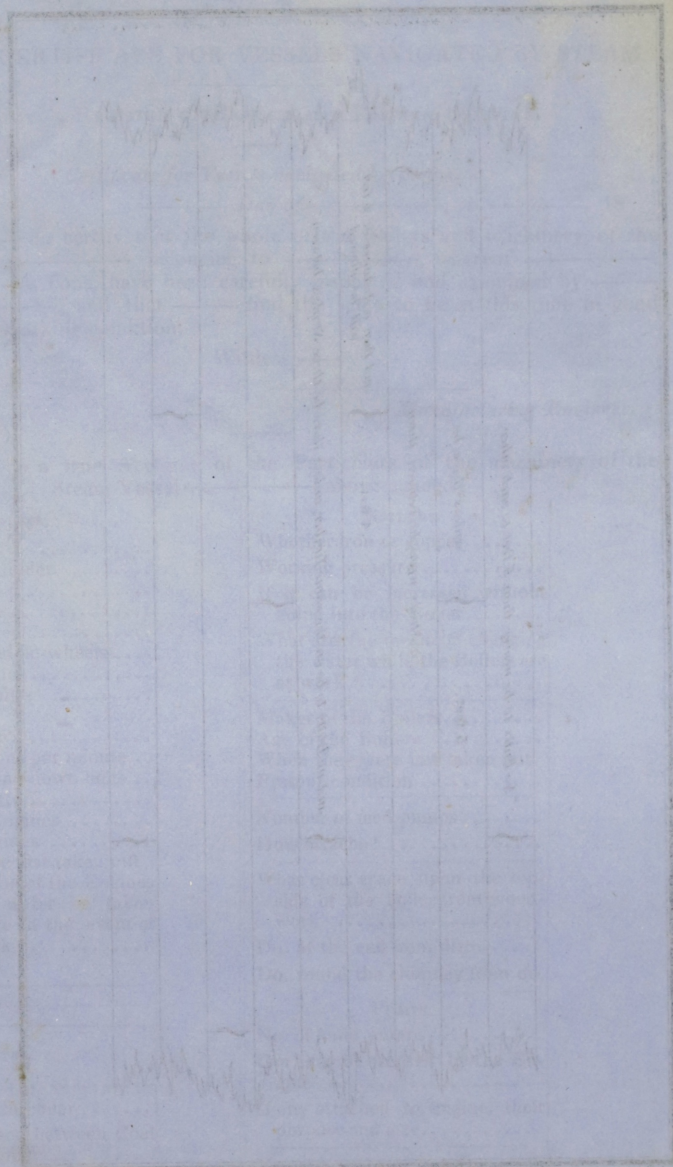
No. of hand pumps .....  
 Can they be worked by the En-  
 gine .....  
 If any attached to engine, their  
 purpose and size.....  
 No. of force-pumps .....  
 No. of branches and hose of  
 sufficient length to reach to  
 every part of the vessel.....

*Manufacturing Engineer.*



The Sketch shows the principle on which the Butts should be arranged, so as to avoid Stepping, which is deemed bad Workmanship.





10 B. B. at west end of road at 11.6  
Mistake of R. M. M. M.



